$5.50 (NZ 6.95) inc GST

Radio and Communications

incorporating AMATEUR RADIO ACTION and CB ACTION

JULY 2001

Uniden's new trunk tracker

The UBC780XLT - worth the wait

Yupiteru MVT7300 Scanner

Brilliant and under $700

IC-M502: Safety in the Perfect Storm

The best of both worlds!

- The first combination AM & UHF transceiver in Australasia
- Super compact size
- Extra large backlit display screen
- Optional hands free operation

AM and UHF transceiver in one Super Compact sized unit.

Give yourself the luxury of both worlds from the name you already trust.

Uniden®

Award Winning Digital Cordless Phones

Available from all leading Uniden stockists. For more information phone: (02) 9599 3355 or visit our website: www.uniden.com.au

Number 72 – July 2001

Radio and Communications

Incorporating AMATEUR RADIO ACTION and CB ACTION

Features

18 Delving the Dark Continent If you have ever wondered if there's much shortwave activity from the depths of Africa there's no need to keep wondering – Craig Seager tells you why...

24 Trunk Tracking It's a whole new ball game as Russell Bryant provides scanfans with the inside info on trunk tracking...

28 The WIA replies The WIA move into the 21st Century – from the other side of the fence.

34 Antenna Special American LB Cebik, W4RNL, is one of the world's top antenna men – here's your chance to read what he would select if he could only choose one antenna.

58 Understanding WWV Indices While originally aimed at 6m operators, this in-depth article will provide all operators with a better insight as to what those strange propagation figures mean.

62 UBC780XLT Tips We asked GregTowells, VK2GJT, for a few hints and tips on this new rig – here are his answers..

71 Breaking New Ground International 2m/70 cm. QSOs – via IRLP – one of the biggest amateur technological developments in fifty years!.....Bob Bell, VK2UTG reports

on this exciting new facet of the hobby.

Reviews

11 UBC780XLT It's been a lengthy wait but Russell Bryant reckons that it's been well worthwhile.

38 IC-M502 For a change of pace, Neil Duncan, VK3ND, had a play with Icom's M-502 VHF marine radio – now all he needs is the boat to go with it.

45 Yupiteru MVT7300 Definitely one of the better ones – and it sells for less than $700. Russell Bryant has carried out a comprehensive review.

Regulars

5 Worth Knowing No "editorial comments" this issue, just a couple items worth knowing...

17 Retro - Yaesu's FT 102 Neil Duncan, VK3ND, looks back on this "oldie, but still a goodie" transceiver.

22 Baudwalk Despite being confined to bed with a foot injury, Tom Sundstrom, W2XQ, came good with his look at what's on the Internet.

31 The 27MHz Dxer Jack Haden, VK2GJH, tells you what you've been missing by way of DX on the 11m band.

40 Shortwave There's been a whole heap of on-air activity during the Tandem Thrust exercise up north – Greg Batty reports.

47 50MHz DX The ever active Jack Haden is back with the recent 6m hit parade.

51 DX Band and IOTA is of course where you will find the latest HF DX information courtesy of well-known DXer Jim Smith, VK6NS.

55 Shortwave If it's where and when to listen for shortwave stations you're after Craig Seager, who provides enough info to keep you going until the next issue.

64 Circuits Galore From Syncro's Jos Hahn comes the latest installment of these popular pages.

67 Modifications Greg Towell's modifications column this issue looks at some hints and tips on a couple of AOR and Uniden scanners.

74 Flightwatch Bob Bell really does give you some behind the scenes data and information on the airline business...

78 DX Propagation charts tell you what sort of a DX month you're likely to have.

August issue on sale July 18

MOBILE ONE®
COMMUNICATIONS SYSTEMS

CELLFINDER©

www.mobileone.com.au

Problems with MOBILE PHONE RECEPTION?

Mobile One Has The Answer !

Amplify Your Signal With
GSM 7.2dB & CDMA 6dB Gain

Copyright 1999 by Mobile One Australia Pty Ltd©

The Cellfinder is a new range of cellular antennas which are now available from Mobile One. Available for Digital or CDMA/Analogue. The Cellfinder range of antennas are specially designed for use in country and fringe areas where cells are few or signals are weak. The Cellfinder is enclosed with a strong fibreglass radome and is supported with a heavy duty stainless steel spring, with the 1/2 inch stud mount. This range of antennas are light weight (320 grams) and can be used for both mobile or base application.

Patch Leads AVAILABLE To Suit Most Phones

RRP $129.95

All Patch Lead Enquiries Phone 02-46556677 or Email peter@mobileone.com.au

MAXIGSM (Digital)
DSE CAT: D-4250
Also
MAXICDMA (CDMA)
DSE CAT: D-4260

AVAILABLE FROM ALL

DICK SMITH ELECTRONICS

STORES

MOBILE ONE

5 YEAR WARRANTY
On all antenna products.

Mobile One Antennas Can Also Be Purchased From

All Dick Smith Electronics Stores

Paruna F3 Wyong Northbound / Southbound F3 Wyong N.S.W 2259 Ph: 02 4362 2944	Radio Parts 662 Spencer St West Melb VIC 3003 Ph: 03 9329 7888	Newcastle Prosound 37 Bluegum Rd Jesmond NSW 2299 Ph: 02 4965 6832	Andrews Communication Shop 8 41-51 Bathurst St Greystanes NSW 2145 Ph: 02 9636 9060	WACB Centre 406 Newcastle St West Perth WA 6005 Ph: 08 9227 1523	WAD Auto Electrics 62 Russell St Coffs Harbour NSW 2450 Ph: 02 6656 2377

All Brisbane Car Sound Stores

A.B.N. 44 001 885 696

WORTH KNOWING

A NEW AMATEUR RADIO BAND SOON?

The ARRL's executive committee has been looking at a proposal to obtain permission to have a new amateur radio band in the vicinity of 5MHz which would be initially allocated to US radio amateurs.

Experimental operation in that part of the spectrum under a license issued to the ARRL has been going on since 1999.

The small slice of spectrum in question, 150kHz in width, could improve emergency communication capabilities by filling the gap between 80 and 40m, according to an ARRL report.

It could also be an interesting DX band, so the eventual aim is not just to make it available to US amateurs.

The International Amateur Radio Union (IARU) Administrative Council has approved a goal of seeking 'a narrow allocation' in the region. However, achieving this goal will be a time consuming process and in fact, it is not on the agenda for WRC-03.

What about the availability of radios for that band? We do not think that this will be a problem, as many amateur radio sets can be illegally and easily modified by 'cutting a diode' to enable them to transmit anywhere. Surely, manufacturers need only modify their software to enable a new legal band?

'CQ 60M' ANYONE?

The ARRL is also seeking amateur radio access to the low-frequency spectrum. A petition has been raised asking the FCC to establish LF allocations near 136kHz and between 160 and 190kHz.

It is with interest that we hear from Canada that the first two-way 137kHz transatlantic QSO can be expected soon. Jack VE1ZZ, near Halifax has been heard in Europe on 136kHz and is on the verge of a history-making first two-way transatlantic LF contact according to Peter Dodd G3LDO.

The antenna Jack uses comprises a 900ft length of wire strung out over three masts 150ft, 104ft and 50ft high - and he runs a mere 25 watts. CW, we understand, has to be sent VERY slowly. Voice modes are impossible.

Hey, members of the anti-CW lobby might care to spend some time on these sections of the spectrum, seeing which mode is feasible...

Canadian authorities have gazetted a notice indicating their intent to amend their amateur radio rules to 'grant full operating privileges on all amateur radio frequency bands below 30MHz to amateur radio operators holding a five-words-per-minute Morse code qualification'.

CALIFORNIAN KILOWATTS

The energy crisis on the West Coast of the United States has all kinds of implications for our hobby. From our perspective, we reckon that QRP may become the norm soon in California - which will quieten 20m no end!

California is a little short of electricity it seems and that is a problem that won't go away too quickly. Some people suggest there will be a choice of (a) producing more power (b) introducing a rationing system or (c) introducing a system of rolling blackouts.

Apparently the third option is appealing to the state's leadership and the governor it seems has even mentioned the possibility of lowering prices which will lead to even more blackouts.

Weird.

(continued on page 8)

The DX Magazine
Since 1989

THE DX MAGAZINE is the only publication of its kind. Published bi-monthly and covering all aspects of the world of DXing. Each issue includes DXpedition stories, DXCC news and events, GoList QSL routes and addresses, product reviews, technical articles of interest to DXers, and much more. The famous **100 MOST WANTED** survey results appear in the January/February issue each year.

DX TIPS FOR BIG GUNS & LITTLE PISTOLS
QRZ DX
WEEKLY DX NEWS BULLETIN
Since 1979

QRZ DX - one of the longest running DX newsletters in the world. 50 weeks each year, you get the latest DX News, information on current and upcoming DXpedition's, QSL routes and more. Available by regular mail or E-Mail (PDF file), you can rely on ***QRZ DX*** to keep you up-to-date on DX happenings around the world.

For more information
Call - FAX or Write
Carl Smith - N4AA

DX Publishing, Inc.
PO Box DX
Leicester, NC 28748-0249 USA
828-683-0709
Toll-Free - 877-397-8254
Email: N4AA@dxpub.com
WEB: http://www.dxpub.com

Radio and Communications
Incorporating AMATEUR RADIO ACTION and CB ACTION

EDITOR:
Len Shaw
PRODUCTION/GRAPHICS:
Viv Brumby

CONTACTS
Editorial & Advertising
PO Box 887, Seymour, VIC 3661
Ph: (03) 5799 2995 Fax: (03) 5799 2979
email: lenshaw@eck.net.au

Radio & Communications is published by
Cinch Pty Ltd (Publishing) – ABN 58 007 038 904
PO Box 1010, Caulfield North, VIC 3161
Publisher: C Lambden
Associate Publisher: J Haden

Printed by: Hannanprint Victoria, 504 Princes Highway, Noble Park VIC 3174. Distributed by: NDD Ltd

Material published by RADIO & COMMUNICATIONS is copyright and may not be reproduced in full or in part without the written permission of the publisher. Freelance contributions are welcome, and while all care will be taken, Radio & Communications does not accept responsibility for damage or loss of material submitted.
Opinions expressed in Radio & Communications are not necessarily those of Cinch Pty Ltd (Publishing) or its staff.

DON'T MISS THE ACTION!

High Performance VHF/UHF Base Station Antennas

Diamond base station antennas offer outstanding quality and exceptional value. These stacked collinear types provide high gain, wide bandwidth and a low radiation angle for extended range. The fibreglass reinforced polyester outer radome and gasket seals provide excellent all-weather operation, and compact ground-plane radials are supplied. Stainless-steel mounting hardware ensures a long, trouble-free life. Supplied with instruction sheets for easy set-up. Made in Japan.

2m/70cm X-50A

Frequency: 144-148MHz, 430-450MHz
Gain: 4.5dB on 2m, 7.2dB on 70cm
Max power: 200W
Length: 1.7m, max wind 60m/s
Type: 6/8λ(2m) 3 x 5/8λ(70cm)
Connector: SO-239 socket

D 4855

$129

SAVE $15

6m 1/2 Wave Base Antenna

A rugged Australian-made vertical antenna designed to cover the 51 to 54MHz range, with minimum SWR around 53MHz. Built using high tensile T81 grade aluminium, it's just 2.9m long with a sealed base section and 100W minimum power rating. Complete with mounting hardware.

D 4825

$79.95

13.8V 2A, 4A Peak Power Supply

Ideal for the workshop, this DC power supply comes with banana posts, a cigarette lighter socket and an on/off switch. Provides regulated 13.8V DC output at 2A (4A, 50% duty cycle).

M 9540

$55.98 **SAVE $40**

12Volt 150Watt Power Inverter

Plug the inverter into the cigarette lighter socket in your car (or any 12 Volt power source) to provide 230 Volt AC power for most electrical equipment. Great for smaller TVs and VCRs, personal computers, and small kitchen appliances in remote locations.
DC Input Voltage: 10.7 - 14.5 Volts (12 Volt nominal)
Output Frequency: 50Hz
Output Power: 160W (surge); 150W (cont.@ 13.8 Volts)
Weight: 700 grams

M 5100

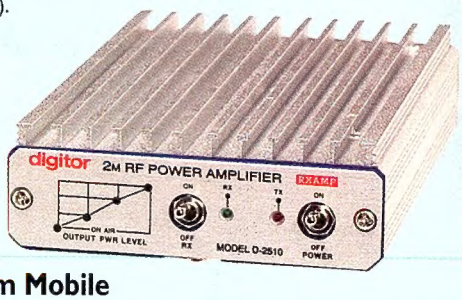
SAVE $41 **$114**

Digitor 2m 30W RF Power Amplifier

If you use your 2m band FM hand-held at home or in the car, but find that 2-3W RF output isn't enough for reliable communications, then this compact 30W RF amplifier may be the answer. It works with inputs from 0.5 to 5W and produces up to 30W output with just 3W input. A switchable 12-15dB gain low-noise GaAS FET receiver pre-amplifier can be selected for improved receiver performance on less sensitive hand-helds when being used in RF quiet areas. The amplifier offers a large heatsink for extended duty-cycle transmissions, fused DC power lead, and SO-239 input/output connectors.
Frequency range 144-148MHz, FM only.
Size: 100 x 36 x 175(WHD).

D 2510

$99.90



FT-8100R 2m/70cm Mobile

The Yaesu FT-8100R is a state-of-the-art 2m/70cm band mobile transceiver that combines high power and a highly versatile memory system with an excellent wideband receiver and solid construction. Its US MIL-STD-810 shock and vibration rating is your assurance of years of reliable operation. Includes hand mic, mounting bracket and fused DC power cord.

CLEARANCE

Features
- 198 memory channels
- 1200/9600 baud packet input socket
- Inbuilt antenna duplexer
- Inbuilt crossband repeater facility
- Dual receive capability (VHF/UHF, VHF/VHF UHF/UHF)
- Optional remoteable front panel

2 YEAR WARRANTY

Frequency range: Tx 144-148MHz, 430-450MHz Rx 110-550MHz, 750-1330MHz (less cellular)
Output power: 2m: 50, 20, 5W
70cm: 35, 20, 5W

$894

LIMITED STOCK

D 3314

2733 DPS 4COL

DON'T MISS THE ACTION!

YAESU VX-150 5W 2m handheld

Compact yet incredibly rugged, the new Yaesu VX-150 2m handheld is designed to perform under the most demanding conditions. The VX-150's diecast aluminium case provides excellent transmitter heatsinking, allowing 5W RF output as standard, while assisting the radio to meet the tough US MIL-STD 810D/E shock and vibration ratings. A large high-output speaker, heavy-duty belt-clip plus illuminated keypad and LCD screen make the VX-150 a pleasure to use.

Features:

- Tx: 144-148MHz, Rx: 140-174MHz • RF Output: 5W with supplied 700mA/h NiCad pack
- Direct keypad frequency entry, CTCSS and DCS encode/decode, battery voltage metering
- Simple Menu system • Over 200 memories • 7 digit Alpha-numeric memory labelling
- Tx and Rx Battery Savers • Case measures just 58 x 108.5 x 26.5mm WHD
- Comes with FNB-64 7.2V 700mA/h NiCad, flexible antenna, and overnight AC charger

D 3648

$345

2 year warranty

NEW FOR 2001

NEW FOR 2001

YAESU FT-1500M Heavy Duty 2m FM Mobile

Another Yaesu transceiver breakthrough, the new FT-1500M blends an efficient transmitter with an almost bullet-proof receiver front end, and is packaged in rugged die-cast aluminium casing. You get powerful 50W RF output, direct keypad frequency entry, Alpha-numeric memory labelling, easy data interfacing, and much, much more.

- Transceiver coverage of the 2m Amateur band (144-148MHz), with extended receiver coverage of the 137-174MHz range.
- 50W RF output, with selectable 5, 10, or 25W lower power levels. The efficient PA stage only draws 8A at 13.8V DC for full RF power output.
- High-performance receiver front-end circuitry using Yaesu's renowned Advanced Track Tuning (ATT) tracking bandpass filter design.
- Includes MH-48B6J DTMF microphone for direct keypad frequency entry, plus convenient Menus with 35 "set and forget" functions.
- 149 memories are provided, with 130 regular memories, 9 pairs of sub-band memories, and an instant recall "Home" memory.
- Additional features: Supply Voltage Display, transmit Time-Out Timer, Auto Power Off, and S-meter RF Squelch.

D 3638

$399

2 year warranty

All Yaesu products listed are priced in Australian dollars, and are not stocked in Dick Smith Electronics stores outside Australia. Check our web site www.dse.com.au for further ordering information.

PHONE FAX AND MAIL ORDERS

direct link

PHONE: Within Australia: 1300 366 644 (Local call charge)

FAX: (02) 9642 9155 within Australia and (+612) 9642 9155 from outside Australia

Visit our web site at http://www.dse.com.au

MAIL: DICK SMITH ELCTRONICS, Direct Link, Reply Paid 500, PO Box 500, Regents Park DC NSW 2143 (No stamp required)

Excludes packaging and postage. All major credit cards accepted. 14 Day Money Back Guaranteed if NOT completely satisfied. (Software, books, contracted phones, ADMS packages excluded)

DICK SMITH ELECTRONICS

That's where you go!

Yaesu transceivers and accessories stocked in selected Australian stores only. Other Australian stores can place orders on a deposit-paid basis. Offers expire 31/7/2001. All prices shown are in Australian dollars and are inclusive of GST.

2733 DPS 4COL

WORTH KNOWING

continued from page 5

LONDON.

More than half a billion GSM mobile phones are now in use worldwide, according to figures released today by the (GSM) association – the mobile/wireless industry's worldwide body.

Their amazing technology allows mobile users to roam more than 168 countries making and receiving calls on their handsets using one global numbering system.

GSM now accounts for more than 70 per cent of the world's digital mobile phones. The three other digital technologies combined account for the remaining 30 per cent.

The GSM market share is expected to grow even more with the introduction of 3G systems.

The largest GSM population is now in China, with some 82.4 million customers. There are already more than 10 million GSM phones in North America.

It is a singularly amazing fact that any one of these phones can simply dial another similar phone from almost anywhere, by pushing the appropriate buttons – hopefully not all at once though.

Now imagine the situation if mobile phones had not been invented and all their present owners were on the air, using amateur radio and calling CQ ...

WATCH OUT

If you're planning to use the AO-40 satellite, watch out for LEILA!

The satellite's ground controllers have turned on the LEILA system, which not too subtly discourages operators from sending too much power into the satellite's uplink receiver.

AMSAT-DL president Peter Guelzow, DB2OS, says LEILA was turned on for the first time on May 12 after some very strong signals showed up in the satellite's passband.

NEW PRODUCT

At $US1189 the new Jupiter desktop HF transceiver from Ten-Tec sounds quite appealing.

The release of the PC-controlled Pegasus almost two years ago provided technology at its most efficient – but having a dedicated PC controlling your HF transceiver is not for everyone.

The new Jupiter uses an identical DSP-based design to the original Pegasus, but is a fully integrated and packaged unit with a stylish front panel for conventional hands-on use.

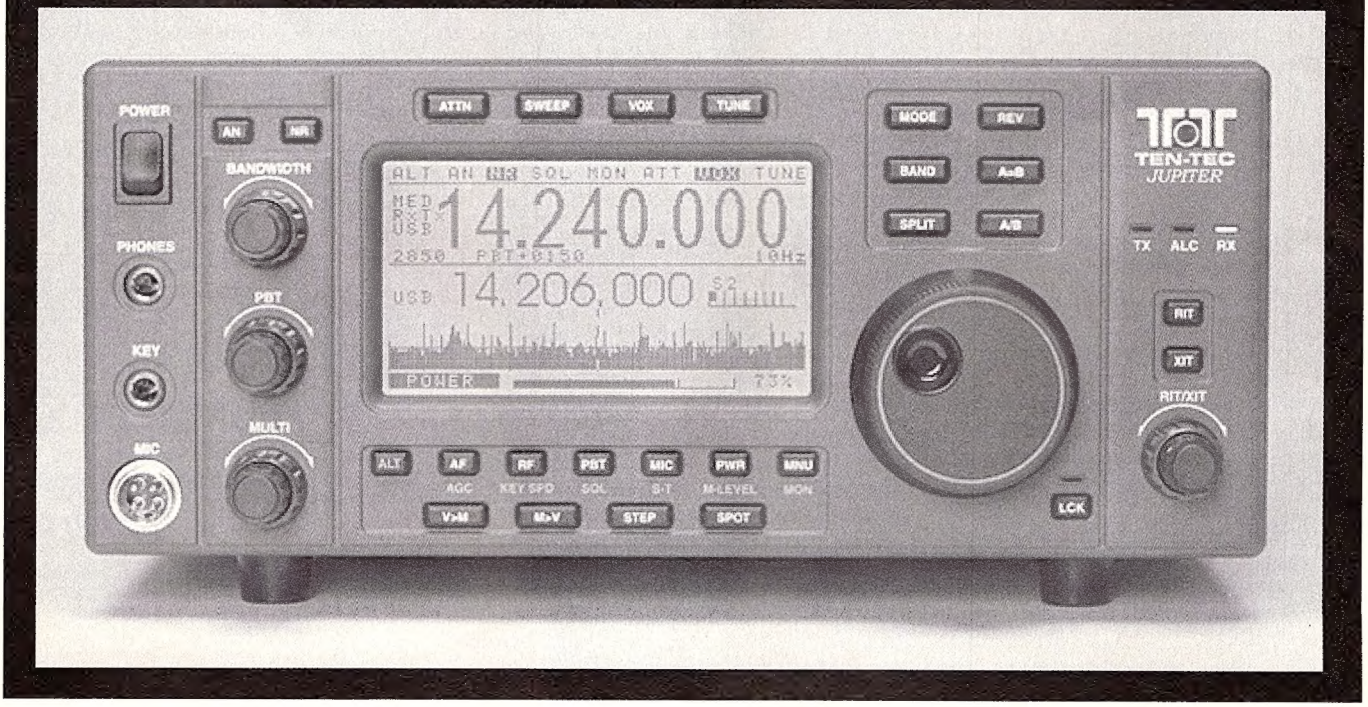
The IF-DSP of the Pegasus offers 34 receive filters, with 25 choices of transmit parameters for voice modes with nine more for digital and CW modes.

On the front panel, a large, multi-function, LCD graphics panel displays just about everything that the PC system would have displayed. In particular, the 'Spectrum Sweep' display gives a snapshot of the entire band in seconds.

The Jupiter covers all nine HF amateur bands, plus general coverage on receive.

It offers dual VFOs, passband tuning, adjustable AGC, variable CW offset and 100 per cent duty-cycle final amplifier transistors providing 100 per cent duty cycle for up to 20 minutes.

The transmit power level is 250 watts if 14VDC is supplied.



"Several people tried to get them to reduce power, but they apparently weren't interested", he said.

"The satellite's UHF receiver was suppressing up to 16dB in sync with their transmissions, and it was decided that this might be a good chance to test LEILA, which is set up to operate on the UHF passband.

"If a too-strong station failed to switch to lower power, LEILA fires up, notches out the offender's uplink and sends the siren signal to the downlink for about five seconds."

LEILA, a German acronym for "LEIstungs Limit Anzeige" (output limit announcement), can notch out five signals at a time.

HAND-HELD COLLAPSE

Palm hand-held computer units are in use by many amateur radio operators around the world.

They are highly suited to such applications as APRS operation and fieldwork of all kinds.

Until just months ago, Palm was generating about US$2 billion each quarter.

The company's revenue is forecast to collapse to perhaps just $140 to $160 million in the current quarter, making Palm a candidate for either going out of business, or at least being bought by another corporation.

All things change in the volatile world of consumer electronics.

WIFI

In Worth Knowing,May edition, the editor mentioned that WiFi technology is now becoming common and can this cause problems for other users.

As someone working for a distributor of those products (and many others) for the past year - don't worry!

The WiFi or IEEE 802.11b standard is the most common in use for wireless LANs worldwide, and supports roaming home users all the way through to big corporations which want to supplement existing wired networks for mobile users, or to other sites with temporary installations where cabling is not justified.

Currently the maximum throughput is 11MBPS (raw) which in reality translates to 3-4MBPS maximum.

Frequencies used are in the ISM band from 2.4-2.4835GHz with a channel bandwidth of 22MHz.

Plans were made for a 22MBPS standard but this has been knocked on the head by the FCC in the US, so it may not see the light of day; 54MBPS should come out next year using 5.8 GHz.

The 2.4GHz band is also used outdoors in point-to-point configurations where the ACA ruling of four watts eirp roughly translates to a 23 dBi antenna using a Lucent radio, depending on cable run.

Reliable 11MBPS links to 10km or so can be achieved avoiding licence fees from the ACA. This is not WiFi/802.11b standard however.

What does it mean for us hobbyists or other professionals who want to eliminate RFI and not worry about other technologies?

The Lucent WiFi card has an output power of 32mW in the 2.4GHz band. Some others have a maximum transmit power of 100mW, but all are spread over a 22MHz channel.

WiFi at 2.4GHz interfering with your radio or TV? I don't think so. Even if you are directly in the path of a 2.4GHz link, don't worry, as an interested hobbyist I've aimed the highest gain antenna I had, with no feeder, straight at a radio with no effect, unlike your mobile phone sitting next to the speakers on your stereo.

THE WAIT HAS BEEN WORTH IT

THE NEW UH090 & 780XLT ARE HERE

780 XLT trunk Tracker

UH090
UHF & AM in one

For your nearest dealer contact

Pacific Telecommunications on 03 9480 5700

60 channels on the Big Screen

NEW

GME's new TX4400 is not only a 40 Channel UHF CB Transceiver but includes 20 extra programmable Receive Only Channels. All 60 Channels are presented on a super large backlit LCD screen.

So now you can listen to Emergency, Commercial, Security or Government services using frequencies between 465 - 485 MHz.

2 YEAR GME WARRANTY

FEATURES

- User Selectable Priority Channel
- User Selectable Open & Group Scan
- 5 Digit Selcall with Quiet Mode.
- ANI & Alpha Labelling for Selcall
- 2nd Function Key for Simplified Operation
- CTCSS
- Variable Squelch
- Page Transpond Mode
- Die-Cast Aluminium Chassis
- Full DIN Size with Shallow Depth

Designed & Made in Australia

Manufactured and Distributed By:

GME Electrophone

SYDNEY (02) 9844 6666 MELBOURNE (03) 9590 9333 BRISBANE (07) 3278 6444
ADELAIDE (08) 8234 2633 PERTH (08) 9455 5744 AUCKLAND (09) 274 0955

For further product information visit our Website: **www.gme.net.au**

Russell Bryant reviews the exciting new

Uniden UBC780XLT TRUNKTRACKER III

Anticipation is high, with rarely a day going by without someone asking, "When is it arriving?" Well, the wait is over! Uniden's latest trunk tracking scanner the UBC780XLT is here!

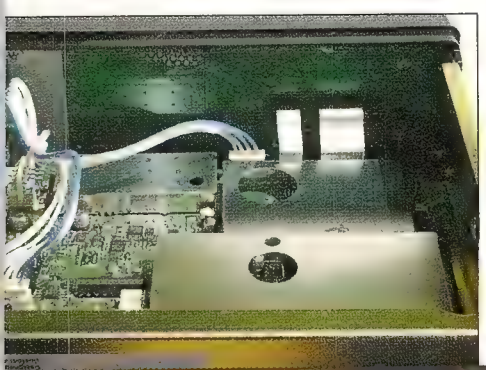
The leading US hobby radio magazine, Monitoring Times said of the BC780XLT, *"It was worth the wait..."*

If the feedback received thus far in Australia is any indication, it certainly has been.

I cannot recall any previous scanning radio receiver generating as much correspondence as the UBC780XLT. Anticipation is high, with rarely a day going by without someone asking, "When is it arriving?" Well, the wait is over! Uniden's latest trunk tracking scanner the UBC780XLT is here!

While trunking is its most important characteristic, the UBC780XLT's performance as a conventional scanner is also above the rest.

In Australia, our initial exposure to trunking was via the Uniden UBC245XLT handheld. Despite of one or two hiccups, the UBC245XLT has delivered the goods proficiently. It has resurrected a hobby that was down in dumps and inspired many to start searching new bands for different and largely untouched targets.



Many new Trunk Tracker owners have become so absorbed by the concept of monitoring trunking systems, that their total listening time is now devoted exclusively to that pursuit.

First, let me say this. The UBC780XLT is more than the UBC245XLT thrown into a mobile case. It is a step forward in scanning technology and development. Despite the quantum leap in scanner evolution, many of the physical and electrical origins of the Uniden UBC780XLT can be traced to three previous Uniden models.

The UBC780XLT owes much of its size and shape to the very popular and highly regarded UBC760XLT mobile scanner. The UBC780XLT dimensions are; 176.5mm W x 61mm H x 167mm D. and it weighs less than 1.5kg. While size is important, it takes second place to features and performance in this scanner.

The trunk tracking functions found in the UBC780XLT are an upgrading of the Trunk Tracker II UBC245XLT. Accordingly, so significant is the improvement that Uniden has referred to the changes as Trunk Tracker III, with many of the negative issues of the handheld being eliminated or at least modified in the mobile.

Finally, as a conventional scanner the UBC780XLT needs to look no further than the venerable UBC9000XLT. The desktop unit supported CTCSS decode (with an optional plug-in board – the UBC780XLT incorporates it as standard), alphanumeric display, wide-band coverage, VFO frequency selection and large LCD display.

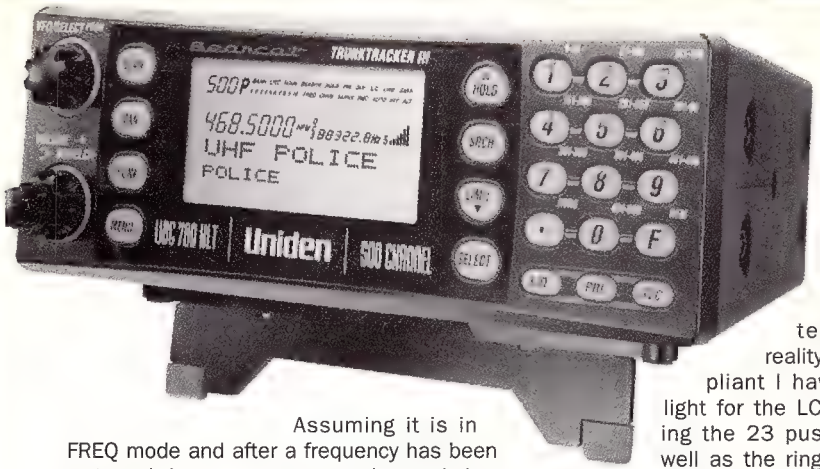
HOW WELL IT PRESENTS ITSELF

The UBC780XLT has inherited a lot from these three scanners, and it also embraces features that are unique to it. With all this scanner history and heritage, the UBC780XLT has a lot to live up to, let's examine how well it presents itself.

The UBC780XLT is of standard construction, which is a box-like device featuring a two-piece metal case sandwiching a stamped metal chassis, which in turn provides the platform for the electronics. The only deviation to this world of metal is the plastic front panel and plastic fold down foot on the bottom half of the case.

The front user interface is home to all the rotary controls and push buttons necessary to program and operate the receiver. Moving from top to bottom and left to right, the tour starts with the VFO dial.

The title VFO is not strictly correct - perhaps a frequency or channel expediter is more applicable? On the second line of the LCD is displayed one of two icons, FREQ or CHAN. These denote the VFO's mode which can be toggled by depressing the VFO dial.



Assuming it is in FREQ mode and after a frequency has been entered into a memory channel (as opposed to a temporary memory as normally found in a true VFO), it can be moved up or down using the VFO dial. Press the VFO dial and the display changes from FREQ to CHAN, whereby the channel increment can be increased or decreased. For those who like entering the 64 police channels in their order, this feature will definitely come in handy.

IT'S NO SURPRISE

Directly below the VFO are the concentric squelch and volume controls. For reasons best known to Uniden product designers these potentiometers are opposed. The volume dial moves clockwise while the squelch turns counter-clockwise. This seems to be standard on all Uniden scanners so it shouldn't come as a surprise. Before moving on, all three knobs have large raised grips, which provide excellent tactile effect making operation and adjustment easy and distinct.

A LARGE & DETAILED LCD

As expected the UBC780XLT has a large and detailed LCD, a hybrid, comprising six individual lines, which incorporate predefined icons as well as two dot-matrix fields for user-specified information.

The first three fields comprise displays for memory channel number, bank numbers from 1 to 10, VFO frequency indicators, channel icons, remote mode, attenuator status, trunk-mode and trunk-type indicators as well as the trunk repeater activity index.

Line four is a busy one, with frequency readout, reception mode, CTCSS tone or DCS code and six-segment signal-strength meter taking pride of place from left to right. Fields five and six make up the dot-matrix portion of the LCD, with the user-composed channel name, bank title and trunking talk group IDs or their alias being but a few of the messages shown here.

GOOD LAYOUT

While the display is busy, I would not put it in the cluttered class. The layout is good with logical placement of the icons and indicators. However should you have a problem with the amount of information shown, you can mask certain portions of the LCD to simplify the data.

Screen mask disables those lines containing the trunk mode and type as well as frequency display and signal-strength meter.

Now for the main bone of contention and in reality the only compliant I have. The backlight for the LCD, incorporating the 23 push buttons as well as the rings surrounding the VFO and volume/squelch knobs is orange! It is possible to alter the intensity of the display between normal (more like bright), dim (which is the best setting) and off.

While I have no argument with the quality of the backlight itself, the color seems far too harsh.

Why orange? According to the experts, it exhibits less dazzle and doesn't destroy your night vision. Remember the antiglare orange streetlights that were prolific a few years back?

I DID BROACH THE SUBJECT

Broaching the subject of the backlight with Uniden in the early stages of development with a view to changing the color to a soft green, however the commitment by the factory to several million orange LEDs presented a strong argument against the idea.

Now to the buttons-and-dials department. Paralleling each side of the LCD are four function buttons. On the left are SCAN, MANual, TRUNK and probably the most important key of all, MENU. Menu will feature prominently in just about everything you do when programming the UBC780XLT - get use to it and learn what happens when this button is pushed.

Hidden behind the Menu button is a vast array of options and parameters that can be altered by the user. You cannot begin to program the UBC780XLT without knowing what functions and features await you after pressing Menu.

ENHANCING ENTRY SPEED

To assist in navigating Menu, which is actually quite simple, Uniden has provided as part of the operating manual a number of flow charts and shortcuts. These enhance the speed at which entries can be made, reducing the overall programming time, which can be considerable.

Along the LCD's right edge is the HOLD button which doubles as the arrow up function; this is followed by SRCH or search, then LIMIT or arrow down and finally SELECT.

Select also supports a dual function, that of MUTE, which is not to be confused with the squelch.

There is nothing more annoying than turning the volume down, to say answer the telephone, only to forget about it. At a casual glance, all looks fine, until you realise there is no audio. If however you mute the audio using the supplied button, the status is indicated on the display, therefore the chances of overlooking this are reduced significantly.

The main keypad is the standard three-by-four layout. As well as dialling up a frequency, the numeral keys 1-10 have the dual function of entering or removing a memory bank from the scan sequence. The decimal point button doubles as the RVRS or reverse key (more on that later), while the E or entry button places the UBC780XLT in remote computer or clone mode when pressed and held for two seconds.

Returning to the reverse mode for a moment. Most transmissions we monitor are from the output of a repeater, (known in the industry as the base transmit or BTX); they are normally strong and cover a considerable area. Occasionally a better idea of what is happening can be gained by listening to the portable or mobile transmit frequency (often listed as the base receive or BRX).

To assist in moving between the BTX and BRX frequencies, is reverse mode, which, with a press of a button, permits the monitoring of the mobile's offset frequency paired to the repeater output frequency being received.

STANDARD AUSTRALIAN OFFSETS PRE-PROGRAMS

The frequency offsets have been pre-programmed using standard Australian offsets, with a full list of reverse frequency bands published in the operating manual.

The three remaining buttons below the grid of 12 are lockout, priority and SVC or Service Scan. Frequencies allocated to five of the most common Australia-wide service can be accessed via the SVC key. They are in order: police 467.850-469.425MHz; railroad 416.975-419.975MHz; airband 118.000-136.000MHz AM; marine VHF 156.000-157.450MHz, and finally UHFCB 476.425-477.400MHz.

Identifying titles accompany each band so if you cannot work out which is which from the frequencies, the scanner will tell you anyway.

Should you locate one of the few birdies that constantly lock up the unit, you can remove the offending frequency from the service scan, adding to the versatility of the unit.

All key presses are accompanied by a beep. The default setting for this function is ON, but if you are one of the few that dislike the beep, it can be turned off.

That concludes the overall look at the business end. Now it is on to the back panel, which is not quiet as busy, but is just as important.

The rear panel of the UBC780XLT supports just five sockets. First is the now-standard BNC aerial connector. Next along is the line-out or tape recorder output jack.

Following on is the external speaker

jack, which in turn is followed by the 12VDC input socket. Last, but by no means least is the DB9 RS232 socket.

FUNCTIONS REMOTE CONTROLLED

When connected to a computer and using appropriate software the UBC780XLT can have its functions remotely controlled, or alternatively be programmed with all the desired frequency and channel data.

If however you lack the software or indeed the computer hardware, you can clone units. All you need is a null modem cable or adapter, a pre-programmed master UBC780XLT and the slave receiver. Follow the instructions contained in the operating guide and within minutes, both scanners will be identically programmed.

FOUR-SECTION TELESCOPING WHIP AERIAL

Naturally, this Uniden comes with a number of accessories that plug into the jacks and sockets detailed above. The supplied aerial is a four-section telescoping whip that extends to about 50cm in length.

The connector is a quasi BNC plug that simply pushes into the socket rather than twist-and-lock in the more traditional fashion. To obtain the best possible reception results the angle of the antenna can be altered via an elbow joint.

To fully exploit the potential of this receiver the purchase of a good external aerial, whether it is for the car or base, is essential.

Powering the UBC780XLT is as easy as one, two, three because Uniden furnish three DC cable options. If your plan is to use this radio in the shack or within reach AC power, then all you need do is to hook up the 240VAC to 12VDC 700 mA plug pack.

If on the other hand you intend to do an equal amount of mobile scanning, you have two choices. The supplied fused figure-8 cable can be hard wired into the vehicle's electrical system. However, if you are like me and don't want to go to the trouble of wiring up the car, you may decide to employ the cigarette lighter lead, which is also part of the kit.

Overall, a versatile power arrangement irrespective of your plans for the radio. A sturdy U-shaped mounting bracket plus all the necessary mounting hardware is in the box. The operator's handbook, which I will discuss in due course, is the only other inclusion.

NO PROGRAMMING CABLE

You may note the absence of a programming cable. Don't ring Uniden complaining about it not being there, because none is included anyway. In an economic move, Uniden built the required interface into the unit. To that end, no specialist programming lead is needed to connect a PC to the radio. A cheap DB9 to DB9 RS232 lead is all that is demanded. These can be purchased from just about anywhere, including some newsagents.

Now to the noisy bits. The bottom-mounted speaker is capable of delivering about 2.5 watts of sound. Those active on the Internet will have read a number of reports from the US, complaining about the lack of audio. The UBC780XLT accompanied me on a recent driving trip to Queensland so I can testify to adequacy of the speaker when using the radio mobile. It is more than acceptable, so do not be put off by negative statements.

In an ideal world, the speaker on every radio ever made should be mounted on the front panel facing the user. This is relevant when the unit is mounted on a desk, as the bottom-facing speaker is delivering the bulk of the sound to that surface. To overcome, in part at least, the problem of the radio talking to the desktop, Uniden have built into the bottom cover plate a fold down foot. This raises the scanner about ten degrees above horizontal, creating a forward-facing path for the audio.

THE COMPROMISE WORKS AND WORKS WELL

As one UBC780XLT buyer pointed out, it would have been just as easy to reverse the construction and mount the speaker on the top cover. Nevertheless, the compromise works and works well.

Notwithstanding the button and dials, the most important part of any scanner is the operating manual. In just under 48 hours I had read and edited the US manual, and conveyed the alterations to the UBC780XLT project manager at Uniden, so that the users guide reflected local conditions.

The reasons for the corrections are many and varied, but suffice to say that it was the week before Christmas 2000 and time was of the essence and unfortunately, a few errors slipped through.

Despite this, only two of the errors were of any real consequence and to overcome these omissions a correction sheet is now being packed with each unit.

Some have also noticed a number of Americanisms remaining in the text; these don't detract from the integrity of the manual and were left because of the aforementioned time constraints.

It is essential that everyone, novice or expert reads the operating guide before attempting to program the radio.

WHAT THE SCANNER DOES

Which bring me to the end of the guided tour, and leaves one question remaining. What can this scanning radio receiver do? Well I am glad you asked. What follows is a basic, yet concise run-down on the primary and secondary features of the UBC780XLT.

They are listed in no particular order and incorporate both conventional and trunking modes.

The frequency range of the UBC780XLT is almost continuous, from 25 MHz to 512 MHz, then 806 MHz to 1300 MHz. It has a total of 500 channels, divided into 10 banks of 50.

The UBC780XLT supports four reception modes including AM for 27MHz CB and aircraft, WFM for the FM broadcast band and television audio carriers, FM for most other two-way monitoring and finally NFM.

As you may be aware, channels in the UHF bands in particular are often separated by 12.5kHz increments. This means they are more susceptible to adjacent channel interference than say a 25kHz channel. Selecting NFM assists in eliminating or reducing interference from nearby frequencies. New South Wales and South Australian Government Radio Network monitors will find this feature very handy in reducing break-through.

To maximise frequency selection, seven user-selectable step rates are available. The increments are 5kHz, 7.5kHz, 10kHz, 12.5kHz, 25kHz, 50kHz and 100kHz.

Any of the conventional memories of the UBC780XLT can be assigned one of the 38 Continuous Tone Coded Squelch System (CTCSS) frequencies or the 104 Digital Coded Squelch (DCS) tones. CTCSS and DCS are assigned to each user of a repeater, and only those radios with the correct tone fitted open up when the transmitter is activated.

Those without the correct tone are oblivious to the fact that the repeater is being used.

A REDUCTION IN INTERFERENCE

To the scanner user this means a reduction in interference as well as the ability to separate different operators on a frequency by the tone they employ. To further assist in identifying individual groups and channels, a 16-character alphanumeric label can be applied to banks, scan lists, search parameters and trunking talk group IDs.

What makes the UBC780XLT stand out from the crowd is its ability to trunk Motorola, Ericsson and Johnson or LTR protocols, in 160MHz, 400MHz and 800MHz bands. The UBC780XLT will also trunk 900MHz systems, however there are none presently operating in Australia.

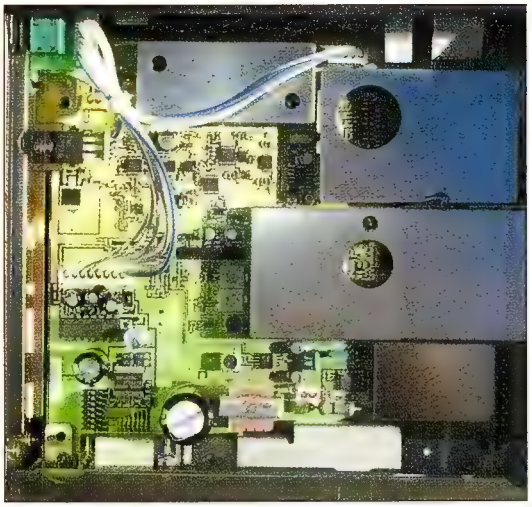
The UBC780XLT cannot decode MPT1327 trunking systems nor can it resolve digital or encrypted signals.

You can program up to 10 trunking systems into the scanner at a time. Each bank must contain only one trunking site and one type of protocol - Motorola, EDACS or LTR.

Conventional frequencies can be entered into the spare memory slots of a trunking bank, without any impediment to the trunking function. Likewise, the UBC780XLT can scan banks programmed with different trunking systems.

TAGGING

Talk group IDs, trunk banks and ID scan lists can be tagged with an alphanumeric alias making identification easier.



One feature of the UBC780XLT that was not included in the UBC245XLT is Individual Call or as it is more commonly known, I CALL. The greatest percentage of conversations in a trunking system is based around the talk group. By definition, I Call is unit-to-unit or individual-to-individual communications.

Users are still going through the trunking system, however they cannot be heard by others within their talk group. Monitoring I Calls will provide you with some very interesting listening.

A word of warning - some I Calls are made to cellular and public exchange telephones and you cannot legally listen to these conversations and must take steps to avoid doing so.

I Call is applicable to Motorola and EDACS trunking protocols and should help overcome some of the troubles encountered by Tasmanian users when using the UBC245XLT.

One of the hardest tasks associated with trunking is ascertaining what frequencies belong to what system.

For Motorola listeners all you need is to program a control channel into the UBC780XLT and it will do the rest, for a powerful feature of the UBC780XLT is a control-channel-only mode.

UBC780XLT FREQUENCY

When the correct frequency is programmed and Control Channel Only mode is enabled the UBC780XLT sits on that frequency until activity is detected, where after the radio tunes the appropriate voice frequency and monitors the transmission. The talk group ID will also be displayed on the screen.

After a while you should have compiled a list of active frequencies and be able to enter them into the regular memory slots, along with any interesting talk-group IDs.

Three options exist for those interested in I Call transmissions. I Call can be turned off in search mode, so the UBC780XLT will function normally and only track talk groups. I Call-only mode means the radio will only search for and display I Call IDs, while I Call on displays both normal talk group IDs along with the six-digit I Call numbers.

I Call ID's can be entered into scan mode and tracked just like talk groups.

ANTICIPATION WAS HIGH

Anticipation was high in South Australia when the UBC245XLT was due here. Many government departments were in the process of switching to the South Australian Government Radio Network, a 400MHz, Motorola Smartzone system. Unfortunately, this eagerness turned to disappointment when it was realised that the Trunk Tracker II was not capable of tracking the SAGRN properly. The UBC245XLT uses a single base or reference frequency when tracking a 160MHz or 400MHz Smartnet or Smartzone system.

Unlike the NSW equivalent, South Australia assigned most of its control channels below the base frequency of 415.5750MHz, rendering the UBC245XLT almost useless in that state. The UBC780XLT on the other hand has provision for three base frequencies, eliminating any problems stemming from control channel assignments.

While on this topic,certain New South Wales GRN sites now have voice frequency assignments in the 413MHz range. Because these are below the base frequency used by the UBC245XLT, they are not trunked. Like South Australia, this predicament has been overcome when using the UBC780XLT.

When programming the UBC780XLT for the NSW Government Radio Networks enter 408.8125MHz as base one, with 415.5750MHz as base two; the channel spacing is to be set at 12.5kHz and the offset left at 380 for both assignments.

South Australian GRN monitors should enter 412.475MHz as base one with 414.125MHz as base two.

Again, the channel spacing is to be set at 12.5kHz, and an offset of 380.

In NSW it doesn't matter if the site you wish to monitor has 413MHz channels or not, the above plan should be followed.

My thanks to Matthew Bonser for the information relating to South Australia.

Please note that these frequencies must be entered in this order, otherwise the radio will not function correctly.

Activating Beep Alert Irrespective of your listening pleasure, some channels or services rate higher than others, yet often get lost among the everyday. To set the specific channels apart from the routine, Beep Alert can be activated on a per-channel basis to warn you when your special frequencies are active. For example, you may wish to be alerted when the fire ground channel become active. With beep alert, you will hear three rapid beeps at the start of each transmission that occurs on specially flagged frequencies.
Beep alert is also handy for those unable to provide 100 per cent attention to the scanner.

You will no doubt now be aware that the UBC780XLT is a feature-packed scanning radio receiver that delivers more than any previous scanner marketed in this country.

While features are fine, they must play a secondary role to performance to a degree. The UBC780XLT has been in Australia for just on three weeks now, and in that time it has attracted a lot of attention and a few comments. Without exception, I can tell you that all the reports I have read or heard have been positive. Remarks like, "Sensitivity is excellent" and "the best scanner so far" or " I am in love", say it all. From my own experiences, I can attest to these comments.

VERY WELL ACQUITTED

To stress out the UBC780XLT, I drove to the top of Mt Coot-tha in Brisbane. For those who don't know the Queensland capital, Mt Coot-tha is to the west of the city and is home to most transmitters in the greater Brisbane area. This includes television, broadcast and two-way radio services. I am here to say the UBC780XLT acquitted itself very well. Little breakthrough was evident, with most incidents being masked by the CTCSS tones. Despite the presence of the megawatt transmitters the radio chugged along nicely. A very pleasant result.

The UBC780XLT is a worthy addition to any radio set-up. If one scanner has to grace the desk of your shack then make it the UBC780XLT, you will not be sorry.

Finally the rumor department. A number of stories are circulating as to the future of the UBC780XLT. Two are creating the most talk among hobbyists. The first and likely to be the most exciting is the digital decode board. This will provide us with the ability to listen in on all the nasty digital transmissions that are about to invade the airwaves.

ARRIVAL DATE?

It should be noted that at the moment this is a concept only. I would not hold my breath awaiting its arrival - you are in all likelihood, going to turn a nice shade of blue.

The second promised addition to the UBC780XLT is a separation kit. With the possible exception of a Kenworth the problem of mounting a scanner in a motor vehicle confronts us all. With the control head fixed to the dashboard, the bulk of the unit can be mounted out of the way under a seat and is therefore less prone to theft. A pre-production sample separation kit is currently being tested, with the cable length the only problem. A lead that is too long means the radio will not function properly due to voltage drops, while a short cable renders the concept of a separation kit useless. Either way stay tuned for further developments.

There is a lot more I could say about the UBC780XLT, but alas, I am limited in space. In a few words, the most exciting development in scanning in a long time, and worth the wait.

My thanks to Uniden for supplying the review unit. The UBC780XLT is available from Dick Smith Electronics stores and Uniden dealers.

SYNCRO

AUSTRALIA COMMUNICATIONS SPECIALISTS

DELTA FORCE

- Delta Force with 6/8 amp power supply $600
- Delta Force with 6/8 amp power supply Sirtel S2000 8 radial base antenna $775
- Delta Force with Santiago 600 mobile antenna $575

Communicate with Force

10 metre Mobile AM/FM/SSB/CW 30W Turbo Echo and AMT

MAGNUM 357DX

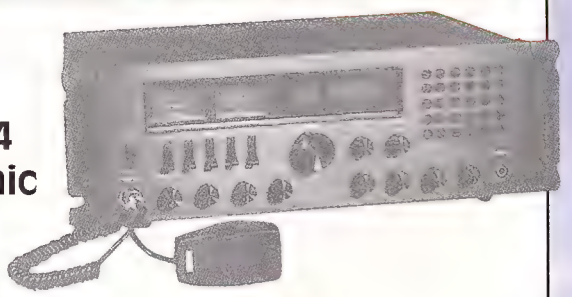
with separate RF deck 10 Metre 150W output plus – phone for details

$745

GALAXY SATURN

10 Metre Base Station

Galaxy with S2012 12 radial base antenna and MB+4 desk top power mic $1040



Galaxy with S2016 16 radial base antenna $995

Galaxy with Spectrum 400 and MB+5 Base microphone with VU meters $1025

Built-in Frequency counter. Echo

- Dirland DSS9000 mobile radio, with Dirland 6/8 Amp power supply and Sirtel GPE27 5/8 ..... $545
- Dragon SS485+ with Dirl and 5/7 Amp power supply and Spectrum 400 ..... $595
- Dragon SS485H with Dirland 6/8 Amp power supply and Sirtel S2012 (12 Radial Base station) $685
- DSS9000 with Linea 800 mobile antenna..... $395
- Magnum 357DX mobile radio 150 watt with Sirtel FMP119 ..... $795
- Dragon S485+ mobile radio with Santiago 600 ..... $415
- Dragon SS485H mobile radio with Santiago 600. $485
- Santiago 600 5/8 mobile antenna..... $80
- Extension speakers SS220F or WS300..... $15
- 22amp Power supply ... $235

POWER SUPPLIES

3/5 Amp	$65
5/7 Amp	$75
6/8 Amp	$98
10 Amp	$128

10 METRE RADIOS

Galaxy Saturn Base + freq counter	$845
Magnum Delta Force	$549
Dragon SS485H	$435
Dragon SS485+	$375
Dirland DSS9000	$360

LINEAR AMPLIFIERS

C737 60 watt	$95
C747 100 watt	$125
B300P 220 watt	$285
B550P 400 watt	$475
Silver 777 220 watt + cooling fan	$345

MOBILE ANTENNAS

Super Carbonium 5/8 4dB 50Watt	$59
FMP115 5/8 4dB	$95
FMP119 5/8 4dB	$98
Linear 800 5/8 3dB	$65

26-29MHZ BASE ANTENNAS

GPS27 1/2 wave	$75
GPE27 5/8 3 radials	$110
Spectrum 400 5/8 16 Radials	$175
S2000 5/8 8 radials	$185
S2016 5/8 16 radials	$235
XY27-3 3 element Yagi	$150

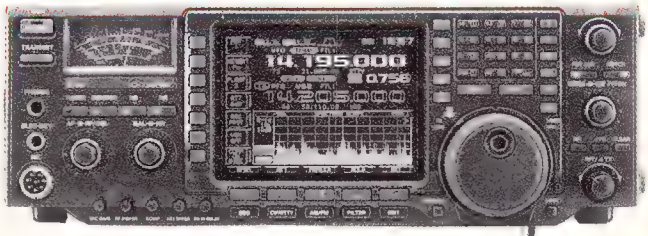
197 FALLS ROAD LESMURDIE WESTERN AUSTRALIA 6076
Tel: +61 (08) 9291 9982 Fax: +61 (08) 9291 9984 Mobile: +61 0404 091 123
Email: hahn@syncroelec.com.au Website: http://www.syncroelec.com.au

STRICTLY HAM PTY LTD

IC-746

- Your best way to get onto HF plus six and two metres
- Multi-function high resolution display • Direct frequency entry
- Fabled Icom *work the world* performance
- Great in the shack or can go portable

IC-756 PRO



- Icom's new HF+50MHz digital performance king! Try to see why...
- Fantastic colour multi function screen

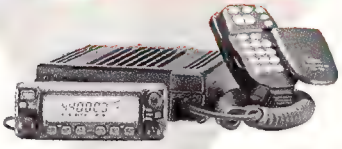
TH-D7A h/held

- Dual bander for effortless two metres and 70cm
- *BUILT-IN* Packet Radio TNC! Ideal for use with APRS
- 200 fully alphanumeric memory channels
- Full 6W out from 13.8VDC
- Supplied with NiCd battery and charger
- Nothing else even comes close!

TS-50S

- Solid mobile or base HF rig
- Fabulous Kenwood audio
- Matching optional auto ATU

IC-207H



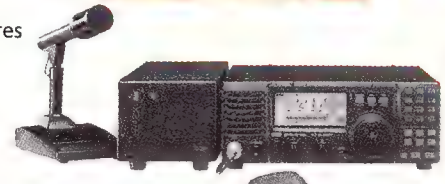
- Affordable dual-bander with no-nonsense Icom quality
- Can be remote-controlled

IC-R3 h/held

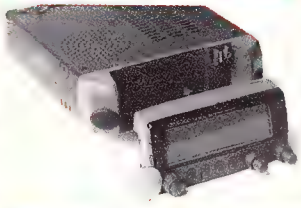
- Meet Icom's fantastic new scanner!
- Huge TFT colour multi function TV screen
- Has high tech Lithium-Ion battery technology
- 450 memory channels
- Covers 0.5 to 2450MHz
- Joystick

IC-718

- Icom's great new HF price leader
- All bands 160-10 metres plus gen cov receive
- 100 effortless watts output on all bands!



TM-V7A

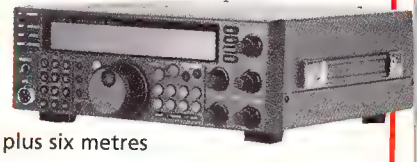


- Stylish Kenwood dual-band 2m & 70cm
- Plug-in 9600 baud TNC convenience
- Can be remote-controlled from the boot

TM-G707A

- Kenwood's latest dual-bander
- Covers two metres and 70cm
- Outstanding Kenwood audio
- Extended receive frequency coverage
- A Kenwood remote-control masterpiece

TS-570S



- Frequency range: 1.8-54MHz, all HF bands plus six metres
- Great heterodyne zapper
- Industry-best DSP *standard* • Improved model better than ever

14 CHURCH ST BAYSWATER VIC 3153
Phone (03) 9729 7656 Fax (03) 9729 7422 • E-mail: sales@strictlyham.com.au
www.strictlyham.com.au

Retro - Yaesu FT-102

WHAT'S IT WORTH TODAY?

By **Neil Duncan**, VK3ND

The mid 1980s saw the transition of HF radios from being all-valve to all-solid state in their design. While the most innovative rigs of that era were all solid state, some rigs remained safely in the middle, effectively caught in both worlds, and the Yaesu FT-102 was no exception.

The design philosophy behind this radio appears to have been 'quality' of the transmitted signal on the HF bands at any cost. To that end, the transmitter uses three 6146Bs in the final with a 12BY7 to drive it. But to add to the mystique of the design, the receiver uses a transmitter power FET in its front-end to (successfully) reduce intermodulation effects to an almost unheard of low. Everything else about the FT-102 is solid state and quite conventional. The result is a very clean transmitter and a bullet proof receiver.

The dual meters give the FT-102 a unique appearance and provide the operator with plenty of feedback about what is going on at all times. Likewise, the twin shift/width controls are a blessing for those who use a variety of modes and who chase DX in the most aggressive of DX alleys.

EXCELLENT AUDIO

We had the privilege to test one of the first of Yaesu's FT-102 production units way back then, and I remember thinking at the time how the audio on receive and transmit was *'just a bit ordinary'*. The next batch onwards had just the reverse characteristic - excellent audio on both receive and transmit.

I guess there must have been a fault in the prototype unit somewhere.

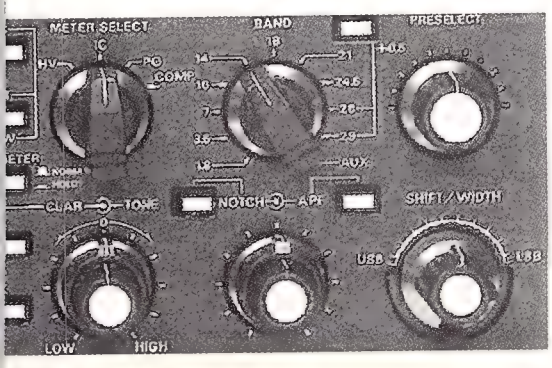
The impact of the three final valve design was threefold. Firstly, the longevity of the valve trio was assured through the lower demands being placed on each. Second, the low distortion figures and cleanliness of the transmitted signals are assured parameters. Thirdly, the FT-102 became the most powerful single-box rig of the era with a healthy 240 watts of RF output at least (but less on 15 and 10 metres).

LETS YOU KNOW WHERE YOU ARE

While there is only one VFO with a fluorescent display and with 0.1 kHz resolution on the rig, the VFO is of an analogue design which,

in my opinion, also adds to the crystal clear sound of such rigs. I also like the analogue readout sitting there just under the digital section. It kind of lets you know where you are on the band as a picture rather than as a number. Again, this is evidence of the merging of the old and new of that era. Despite the presence of an analogue VFO with the presence of nearby heat from four power hungry valves, the FT-102 is stable enough for most applications.

There are heaps of connection points on the back panel, and on the front, such things as noise blanker level and vox controls to suit any knob twiddlers whims. The power source is from the 240 VAC mains and the frequency coverage of both the transmitter and the receiver is limited to the 160 - 10 metre amateur bands including 30 metres and so on.



These are arranged in 500 Hz sections, and while no general coverage receive is available, the benefits of amateur-band only operation with individually wound coils for each band becomes evident when you compare the sensitivity and cleanliness of this receiver against all but the best of modern rigs.

The FT-102 is capable of operating in the SSB, CW, AM, and FM modes but since the AM and FM modes were optional extras, it is not a bad idea to check if these modes are present if you are contemplating buying one of these rigs second hand. While the FT-102 has only one VFO, it does allow for the full switching of an external one.

The FT-102 is a large-ish set (380 x 140 x 380 mm), weighs a hefty 15 kg and while it does not come with any form of antenna tuner, you can find a matching FC-102 ATU unit on the second hands market along with an FV-102 VFO if you hunt around.

Is there a notch filter? Yep. What about an audio peak filter for CW? Yep. Speech processor? Yep. Maybe a CW keyer? No.

ARE THERE ANY DOWN SIDES?

Well one of the prices you pay for a such excellent cleanliness and audio quality is that there are three knobs to adjust each time you move around the band. One pair for the transmitter finals and yes, you must certainly know how to set them properly lest you damage the valves. The third knob is for the receiver, Yes, you must peak the incoming signals with a preselector control once every now and again.

A real problem? Naah, you get used to it all.

SUMMARY

The FT-102 was a top shelf rig in its day. While modern sets run rings around it in almost every respect, there are not many come near its audio quality. Provided you can live with its four valve complement and can cope with that business of the three knob tune-up routine, this is a really nice basic radio.

It's price should be well below $1000 and probably as low as $600 unless it is in virtually mint condition.

DXing THE DARK CONTINENT

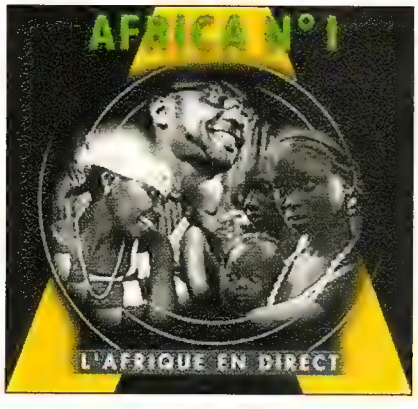
Nearly all African nations have a presence on the HF bands. The reasons for this are both historical and practical.The prevailing terrain and distances that need to be adequately covered make HF broadcasting a necessity in many instances, but broadcasters in the region have also traditionally sought to reach neighbouring countries, some of which may perhaps contain populations of the same ethnic or tribal grouping. Report from Craig Seager.

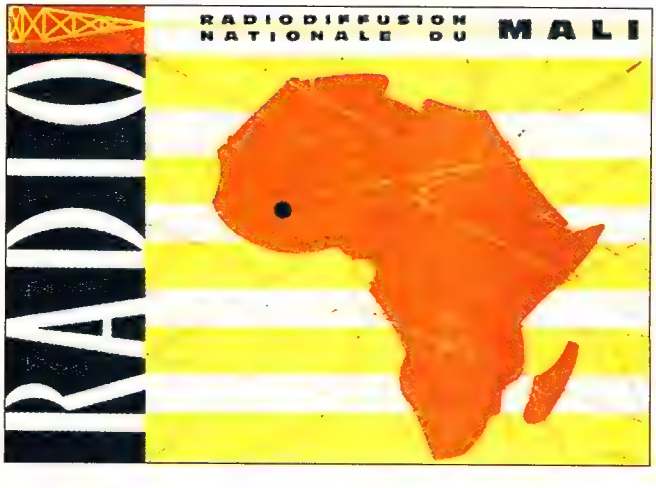
Africa has long appealed to the shortwave listener as a rich hunting ground for radio exotica, much of its infrastructure a legacy of long-crumbled European colonial empires, and characterised by extended transmitter outages due to civil strife and lack of spare parts. Our Shortwave Notes correspondent, Craig Seager, takes us on a safari of the African HF broadcasting scene.

"I saw him extend his short flipper of an arm for a gesture that took in the forest, the creek, the mud, the river — seemed to beckon with a dishonouring flourish before the sunlit face of the land a treacherous appeal to the lurking death, to the hidden evil, to the profound darkness of its heart."

So wrote Joseph Conrad in his classic tale of 19th century ivory traders striking into the West African interior, "Heart of Darkness". Although much of Africa has since felt the touch of Western modernity, as a whole the continent continues to evoke these mind pictures of tangled jungles, ancient animism rituals, rampant cannibalism and machete-wielding hordes overthrowing the latest banana republic dictator. This may not be entirely fair, as the African scene today is certainly one of diversity, with a few countries boasting meritorious economic development and even what might be considered to be "enlightened" leadership. Such diversity is also reflected in the broadcasting scene, where extensive language networks operated in one country will contrast with a near neighbour, where the resident technician will rejoice if he has access to a lone serviceable transmitter!

Nearly all African nations have a presence on the HF bands. The reasons are both historical and practical. The prevailing terrain and distances that need to be adequately covered make HF broadcasting a necessity in many instances, but broadcasters in the region have also traditionally sought to reach neighbouring countries, some of which may perhaps contain populations of the same ethnic or tribal grouping. Then, of course, there is also the value of propaganda, whether intended to incite the toppling of an unfriendly government, or simply to put a viewpoint on the latest border dispute. Aid agencies and international broadcasters have lately been instrumental in the establishment of local FM networks, but it is quite conceivable that shortwave broadcasting will continue to play an important role, and a large portion of the receivers sold in Africa still have at least one shortwave band.





"Going up that river was like travelling back to the earliest beginnings of the world, when vegetation rioted on the earth and the big trees were kings. An empty stream, a great silence, an impenetrable forest."

Regrettably, most parts of Australia are not ideally placed to enjoy good all year round African propagation, but having said that, most, if not every country in the region using HF has been heard at one time or another, and some of these at exceptional signal levels. In the eastern states, we have two main opportunities to log African stations and it is no secret that the cooler months are more favourable.

For listeners in the eastern states, late afternoons bring low frequency signals from West Africa that follow a path across the Pacific and are heard from sign-on in the period from 0530z until the effect of encroaching daylight at the transmitting end of the circuit takes hold. This may be as late as 0830z in our summer months, perhaps an hour earlier in winter.

Seasonal variations are quite pronounced, as are the behaviours of different frequency ranges: In July it will be possible to hear the occasional station on 90 metres at 0600z, whilst in December our later sunset will reveal nothing but noise on that band. Conversely, in summer it is not uncommon to hear Nigeria on 7255 kHz and Algeria on

7245 kHz to 1000z, whilst in winter this would be almost impossible. Naturally, the longitude of the desired station is also a factor, and aside from experience, a great circle map with a simulated terminator can be the only guide.

Early morning is perhaps more advantageous, when signals arrive in Australia from the west, and we tend to hear a broader range of stations from sunset at the transmitter until evening sign-off. Additionally, we can hear a selection of East and Southern African stations, many of which are next to impossible in our afternoons. A cursory poke around on 90, 60, 49 or 41 metres at 2030z in winter (or earlier in summer) will reveal a number of broadcasters, some of which will still be audible at 2300z.

There is also a bizarre opening to south-eastern Africa, which occurs during mid-summer in low sunspot years. Via this mode, which is erratic and therefore yet to be fully explained, signals appear from 0230-0430 on 49, 41, 31 and 25 metres - mostly when very little else is audible. In previous years outlets such as Kenya on 6150 kHz, Botswana 7255 and various Channel Africa frequencies have been logged.

I can't speak authoritatively about propagation into Western Australia (someday I'll go there and find out for myself!), but by simple extrapolation one would expect that the afternoon mode would be virtually a non-event, and mornings would provide later fade-outs for those stations that haven't already signed off. New Zealand folk can even hear east African stations in the local afternoon with some regularity; the morning proceedings are more difficult and are time-shifted earlier.

There are few African stations on the higher bands (19, 16, 13, 11 metres), where daytime (UTC) propagation is supported, but those that are (Radio Deutsche Welle's Rwanda relay, Africa No. 1 - Gabon) are quite easily heard at such times as 1100z.

Rather than a long dissertation on propagation mechanisms, which can be gleaned from IPS charts anyway, it is more advantageous to look at frequency occupancies and known facilities. Regrettably, the standard references tend to be out of date, reflecting the conservative nature of those publications. In effect, the policy seems to be to continue to list an outlet until positive confirmation of inactivity, in triplicate and embossed with an official seal, is received.

The African radio scene does not lend itself to such bureaucratic niceties and in most instances it is unlikely that "positive confirmation" will ever arrive! The most reliable information in this instance comes from the hobbyist community, and the occasional snippet from BBC Monitoring (which has its own remote-controlled receiving stations in Africa itself).

ALGERIA

Radio Algiers has a very distinctive format, these days mixing the mostly Arabic programming with French segments (separate Arabic, French and Kabyle networks used to operate on shortwave). By far the easiest frequency is 7245 kHz, audible from around 0600. The external service is a little more difficult, currently listed for 15,160 and 11,715 kHz, including English at 2000z.

ANGOLA

When the Portuguese departed Angola in 1975, they left behind an extensive shortwave network, which included provincial outlets at such places as Lobito, Lubango, Huambo, Cabinda and Benguela. Although

publications such as the "World Radio TV Handbook" continue to list these, I'd be very surprised if any are in fact still active, most having faded away gradually over the last 25 years. The central station in the capital, Luanda, continues to maintain several shortwave transmitters: 3375, 4950, 7245, 9535 and 11,955 kHz are all active frequencies. The external service goes out from 1900-2300 on most of these, including English at 2100z.

BENIN

Benin's ORTB operates on 7210 kHz from sign-on at 0530 or 0600, and is also audible from 2000-2300 sign-off. The traditional night time channel, 4870 kHz, has been silent for many months. A regional outlet, at Parakou, came on air in 1983 using 5025 and 7190kHz, occasionally observed in Australia on the former. Most programming is in French, with various ethnic languages mixed in.

BOTSWANA

Radio Botswana's interval signal is a cacophony of farm animal sounds and cow bells, and on rare occasions in the eastern states during mid-summer can be heard on 7255 kHz just prior to 0255z sign-on. Somewhat more common are 4820 and 3356 kHz, best from 1800-2000z. Less challenging again is the VOA's high-powered relay at Selebe Phikwe.

BURKINA FASO

Formerly known as Upper Volta, Burkina Faso operates a single shortwave transmitter on 4815 kHz from 0530z sign-on, and is also audible from 1830z. Most programming is in French, and I haven't been able to confirm an English news bulletin reported at 1920z. A new, more powerful transmitter is also said to be in the works.

BURUNDI

Inexplicably, the "World Radio TV Handbook" has left this country completely out of its last two editions! Radio-Television Nationale de Burundi is very irregular on shortwave, but is listed for 6140 kHz. Even when active, it is only rarely heard, though listeners in WA might care to try around 1600z.

CAMEROON

The word "Cameroon" comes from the Portuguese "camaroes", prawns fished by Portuguese explorers in the region, however the country has more heritage from German, and later French and British colonial rule. Provincial stations at Bertoua, Douala and Bafoussam faded away in the late 1980s, though Buea (6005 kHz) and Garoua (5010/7240 kHz) are occasionally still reported active. The key station at Yaounde is listed for 4850 kHz, but is no doubt operating at considerably less power than its 100 kW rating. A favourable time might be 2130z.

CENTRAL AFRICAN REPUBLIC

Radiodiffusion Television Centrafricaine continues to be active on 5034 kHz, peaking from 2030-2300z. The UN sponsored Radio Minurca (9900 kHz) closed down in February 2000, with as yet unrealised plans to emerge under new management.

CHAD

Third World in the extreme, the arid terrain of Chad is the basis for many of those old French Foreign Legion movies. The capital, N'djamena, boasts a 100 kW shortwave transmitter for coverage of the vast interior, currently operating on 6165 kHz. On weekends, they run an hour later, to 2300z, which is the best logging opportunity (Zambia is also here to 2200z). Traditional 4904 kHz seems to be inactive.

CONGO

A very confusing situation here, to say the least: Both the former French colony (capital at Brazzaville) and the previous Belgian possession formerly known as Zaire (capital at Kinshasa) are now calling themselves "Congo". The radio scene is also a mess, with years of civil war, recent presidential assassinations and displaced persons from

Rwanda having taken its toll on both economies and infrastructure. The position on the airwaves is changing almost by the week. Hot frequencies to check are 3390 and 5066 kHz (the former Radio Candip in Bunia), 5985 kHz (Brazzaville), 15,245 kHz (Kinshasa), 7205 kHz (Lubumbashi), 6713 kHz (Bukavu), none or all of which may be active at any one time!

EGYPT

Radio Cairo operates an extensive schedule for external audiences, including English for South Asia on 17,595 kHz from 1215z. Despite modern and powerful facilities, the audio quality is uniformly dreadful

EQUATORIAL GUINEA

Spanish speaking Equatorial Guinea has two domestic shortwave outlets, Malabo (6250 kHz) and Bata (4926/5003 kHz). Additionally, there is a transmitter on 15185.7 kHz which identifies as "Radio Africa" and "Radio East Africa", carrying transcription Gospel programming from the U.S. to 2300z, and again from 0700z.

ERITREA

The Voice of the Broad Masses of Eritrea was once considered a clandestine operation, but with the shifting sands of the political scene in the region is now considered a legitimate government sponsored broadcaster. 71-kHz is the best frequency, between 1600-1830z.

ETHIOPIA

Radio Ethiopia's National Service (mostly in Amharic) is a relatively easy catch on 5990, 7110 and 9704 from 0400 sign-on, and again from around 1400z. The external service "Voice of Ethiopia" still has English on 7165 and 9560 from 1600-1700z, rather inconveniently timed for us.

GABON

Despite being otherwise a rather obscure West African country, Gabon is certainly one of the most easily heard by virtue of Africa No. 1, Moyabi, a commercial enterprise owned mainly by French interests. Four (later increased to five) 500 kW transmitters came on air in the late 1970s amidst great excitement, and nowadays relay programming from Radio France International and Radio Japan as well as a home-grown product. For the latter, check out 9580 kHz from 0500z and also 17,630 kHz from 0700z. The National Service from the capital, Libreville, is sometimes heard on 4777 kHz, though in recent months has been more common on 7271 kHz until 2300z sign-off. A regional service from Franceville, which once operated on 4830 kHz, has been silent for many years.

GHANA

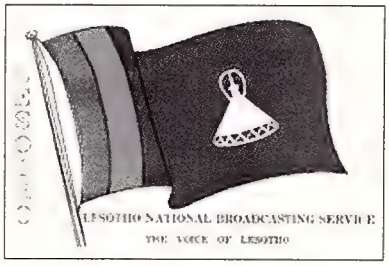
With lots of English programming, Ghana Broadcasting Corporation is one of the more interesting African stations to listen to. Regular frequencies are 3366 and 4915 kHz, carrying Radio 2 and Radio 1 respectively, though the news bulletins are common to both. 0600 and 2200z are good times for this one.

GUINEA

The transmitter on 7125 kHz from Conakry is widely heard in French and vernaculars, especially at around 0700z; other listed channels 4900, 6155, 9650 and 15310 only make very rare appearances, despite an equipment refurbishment by virtue of external aid a couple of years back.

IVORY COAST

Having for a time enjoyed relative prosperity and foreign investment, the folk in the Ivory Coast built themselves a stunning new capital city at a place called Yamoussoukro ...only thing is they never actually got around to moving in, and there it sits neglected and unused, complete with the world's biggest church - opened by the Pope a few years back. The government also acquired a couple of 500 kW shortwave transmitters, which only stayed on air for a few months, forgotten just like Yamoussoukro. Dxers from time to time report the old 20 kW transmitter on 7215 kHz, but I promise you this is nothing but wishful thinking, as it too is inactive, and has been for some years.



KENYA

The Kenyan government is holding a bit of an austerity drive at present, and there are also reported electricity shortages. Accordingly, the only operation on shortwave from Kenya Broadcasting Corporation is on 4885 kHz until 2110z sign-off. The 250 kW units at a location known as Koma Rock (6075/6150 kHz) are currently taking a rest.

LESOTHO

The LNBS in Maseru is one of the easier early morning catches for us, using 4800 kHz until 2200z. Programming is primarily in Sesotho, punctuated by one or two English news bulletins.

LIBERIA

The government has muzzled Liberia's media, resulting in the closure of a couple of independent stations that were operating on shortwave. The uncontroversial ELWA (4760 kHz) continues on, now in its third incarnation, and there are also occasional reports of Liberian Communications Network on 5100 kHz.

LIBYA

Oil proceeds have allowed Col. Gadaffi's Libyan Jamahiriya Broadcasting to develop a powerful external service on such frequencies as 15,415, 15,435 and 17,725 kHz. A brief and very dour English segment "Voice of Africa" goes out at various times during the day, with most other programming in Arabic.

MADAGASCAR

Radio TV Malagasy is one of the strongest Africans on 60 metres, utilising 5009.5 kHz until 1900z sign-off (2100z weekends). If I had a dime for every time this outlet was erroneously reported as Garoua, Cameroon, I might be wealthy by now! Also check 3288 kHz, which is normally there in parallel. Most will already be aware of Radio Nederland's relay base at Talata/Volondry; the most interesting broadcast to hear from this one is a lower-powered relay of Adventist World Radio, on 3215 kHz from 1530-1630z in French and Malagasy.

MALAWI

The MBC, Blantyre, has been a relatively stable presence on 3380 kHz for some years, and operates until 2200z sign-off. Disappointingly, the musical content from MBC seems firmly locked in the disco era! A daytime outlet, 5993 kHz, is certainly possible at approximately 1500z, but in practice is swamped by international stations.

MALI

ORTM, Bamako signs on at 0600z on 4783, 4835 and 5995 kHz, switching a couple of hours later to 7285, 9635 and 11,960 kHz. They play the national anthem again at 0800, as if the broadcasting day is just beginning. The instrumental rendition in use can run for almost 20 minutes! The 60 metre frequencies are also an early morning chance here. Mali's broadcasting infrastructure is kept intact by Chinese aid, and the trade-off is relays of China Radio International at certain times of the day.

MAURITANIA

Nouakchott is the often largish signal on 4845 kHz in our late afternoons, in Arabic and French. Sometimes a bit of Saharan sand gets into the transmitter, and it wanders down to 4826 kHz). This is also a morning chance, but beware competition from Malaysia, also with Islamic content, on the same frequency.

MAURITIUS

Frequencies such as 4855 and 9710 kHz are very much silent - but rumours abound that MBC will return in the future.

MOROCCO

Radiodiffusion-Television Marocaine is the government broadcaster, and uses such frequencies as 7160, 11,920, 15,345, and 17,595 kHz for its Arabic language services. Of more interest is the semi-commercial Radio Mediterranee Internationale on 9575 kHz from 0500z, and also in our mornings. You may even be lucky enough to hear the (2000 kW) longwave outlet on 171 kHz, in French and Arabic. The Voice of America operates a massive relay station nearby, at Breich.

MOZAMBIQUE
Poverty-stricken Mozambique, a former Portuguese colony, has a number of irregular shortwave channels. Maputo may be heard early mornings our time on 3210, 6111, 9618 and 15,293 kHz, but is rather a difficult catch. The station at Beira is no easier on 3370 and 9637 kHz.

NAMIBIA
Two NBC channels are likely here, 3270 and 3290 kHz, both best around 2030z. Expect to hear programming in Afrikaans, local languages, English and German.

NIGER
The name of this country is derived from the Tuareg word for "flowing water". Unfortunately, Niger doesn't have much water at all, and like neighbouring Mali and Chad consists mostly of the Sahel, an arid and stony region bordering on the Sahara Desert. The French moved out in 1960, but their language remains in common use. The best frequency is 5019 kHz (from 0530z fade-in, and also at 2100z), but daytime channels 7155 and 9705 kHz are regularly active, and occasionally reported here.

NIGERIA
The external service Voice of Nigeria is a no-brainer, morning and night on 7255 kHz (also sometimes on 15,120 kHz), but broadcasts for domestic audiences are widely heard as well. Lagos uses 3326 and 4990 kHz, Kaduna 4770, 6090 kHz, Enugu 6025 kHz and Ibadan 6050 kHz. Other locations, though optimistically listed by otherwise authoritative sources, are dead in the water. East coast listeners may find our winter afternoons (0600z) the most favourable for all of these.

RWANDA
Apart from Radio Deutsche Welle's high-powered relay, the local product, Radio Rwanda is the only other operation here. The only active channel is 6055 kHz, but very strong signals are in evidence until 2100z sign-off. Increasingly, there also some English news bulletins (notably at 1915z), amongst the largely French programming.

SAO TOME
Another former Portuguese colony, S„o TomÈ's only shortwave presence is the VOA relay at Pinheira. If you can successfully loop out 2VM (Moree) on 1530 kHz, you might be able to hear the mediumwave outlet as well.

SENEGAL
References continue to list Dakar for 4890 and 7170 kHz. I suspect the latter may still be active, but unconfirmed here for many months.

SIERRA LEONE
SLBS, Freetown sprang suddenly back to life during Sierra Leone's recent violent past, and uses 3316 kHz from 1900z (and might even be a rare catch in NSW at 0630z). English news bulletins are generally on the hour, some relayed from the BBC.

SOMALIA
The broadcasting scene in this East African country is quite complex, and each political faction or militia operates its own station. Current frequencies for all of them are very much moving targets, but are generally in the range from 6500-7500 kHz, and are most audible from 1800-1900z. Radio Galkayo is operated by the Somali Salvation Democratic Front and uses a Yaesu FT-747 (!) on 6985 kHz. Radio Baydhabo belongs to the Rahanwein Resistance Army (RRA) and is reported on 6806v, whilst another player is Radio Banaadir on 7020 kHz, reportedly assisted by the International Amateur Radio Network. Radio Mogadishu, of the Hussein Muhammad Aideed faction uses 6750 kHz, and Radio Hargeisa, located in the former British Somaliland (now seeking succession) is heard on 7530 kHz.

SOUTH AFRICA
The extensive Sentech-operated site at Meyerton plays host to the external service, Channel Africa, plus a range of international stations including the BBC, Trans World Radio, AWR, African Beacon and Radio France International. The SABC internal shortwave service is also active from this facility, but reception in Australia is extremely infrequent, despite some of the frequencies changing seasonally.

SUDAN
Sudan National Broadcasting Corporation operates on 7200 and 9024 kHz. An irregular English segment is worth looking out for at 1700 or 1800z.

SWAZILAND
The long-established Trans World Radio facility at Manzini is the only chance of hearing this tiny East African Nation. The tropical band outlets 3200, 3240 and 4775kHz are usually the most productive, between 1600-2000z. Although it is still regularly listed (and even sometimes "heard" by over-enthusiastic listeners) Swazi Commercial Radio (6155/9704 kHz) is very definitely not on air.

TANZANIA
The Swahili service from Dar Es Salaam seems to alternate between 5050, 5985 and 7280 kHz, usually reported up until 2100z sign off. Earlier channels such as 4785, 6105, 9684 and 15,435 kHz are no longer in use. Somewhat more exotic is the island of Zanzibar, just off the coast, which uses 11,734 kHz and is frequently heard between 1400-2100z.

TOGO
Radiodiffusion Togolaise has been one of the more stable stations on the bands, ever reliable on 5047 kHz afternoons and mornings. A daytime frequency, 7265 kHz, is rarely heard in Australia, and the regional outlet on 3222/6155 kHz ("Radio Kara") is rarer still.

TUNISIA
A fully-fledged external service operates from the capital, Tunis, mostly in Arabic, and frequency usage is seasonally adjusted.

UGANDA
Some years ago, during the rule of Idi Amin, Radio Uganda used to operate an external service, which included a broadcast at 0300z on 15,325 kHz that was intended to give secondary coverage to Australia and New Zealand. More recently, 5026 and 4976 are the only frequencies heard here, to 2100z sign-off.

ZAMBIA
Zambia National Broadcasting Corporation is easily heard here until 2215z sign off on 6265 (vernacular service) and 6165 kHz (English service). 4910 kHz is also sometimes in use. Christian Vision (which also owns stations in Chile and Australia) provides the strongest signal from Zambia, on 4965 kHz to 2200z.

ZIMBABWE
Frequently in the news these days for alleged government editorial control, the Zimbabwe Broadcasting Corporation is currently heard on 4828 and 6045 kHz to 2200z sign-off. Other occasional channels are 3306, 3396, 5012 and 5975 kHz.

"We were wanderers on a prehistoric earth, on an earth that wore the aspect of an unknown planet".

Favourable conditions for propagation

With the approach of winter, favourable conditions for propagation from Africa into the South Pacific will prevail, giving ample opportunity for listeners to try their hand at hearing many of the countries listed. The major attraction of African DX is its unpredictability. Stations come and go with monotonous regularity, influenced by the often volatile political climate - or the unexpected sudden arrival of some overseas aid, earmarked for the refurbishment of mothballed transmitters. Happily, African broadcasters are generally very conservative with frequency usage, making identification by those of us unfamiliar with some of the regional dialects that little bit easier. If a long inactive African station decides to make a return to shortwave, chances are it will be on the same frequency it used 30 years ago. Don't throw out those World Radio TV Handbooks from the 1970s - chances are you may need them for your future African DX endeavours!

Baudwalking

Welcome. Russell Bryant recently reviewed the Yaesu VR-500 handheld receiver, and we agree that it is a marvellous little unit for the money. There were numerous reviews written in the USA on the scanning aspects of the receiver. Some months ago we opted to write a review from a HF perspective, and that appears in the Receiver Shopping List on Radio Netherlands' Media Network pages at http://www.medianetwork.nl.

We did have the opportunity to use the software designed for the VR-500. This is what we originally wrote in January 2001:

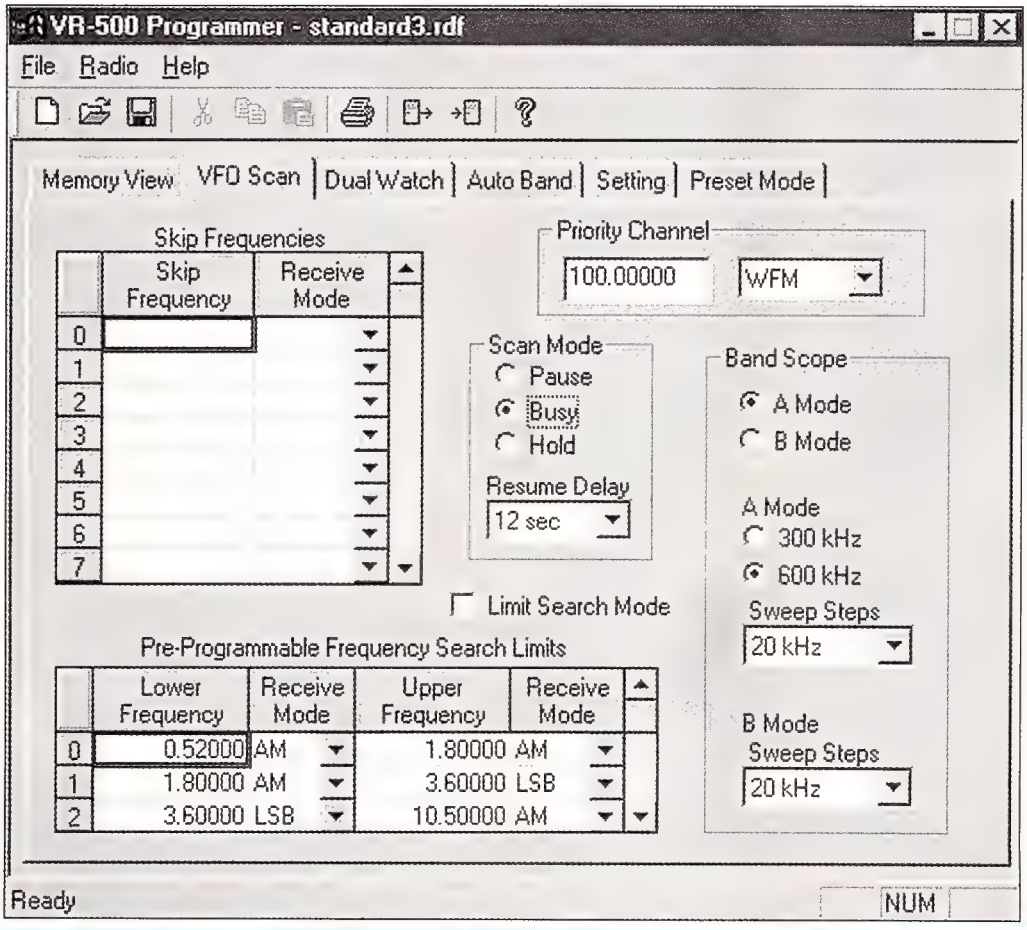
The ADMS-3 Windows software, designed by RT Systems (http://www.rtsars.com) of Kennesaw, Georgia, USA, is easy to use. Multiple memory files may be prepared offline, limited only by disk space. The main screen pictured here is the primary one of interest. Worthwhile improvements over the handheld transceiver software of years past include the abilities to insert and delete frequencies, move entries and sort the data set. Although the software does not directly import data from outside sources, we understand from research on the Internet some owners have created data sets by cutting and pasting data from Excel spreadsheets into the ADMS-formatted file.

It is also important to note that if you add frequencies, or otherwise change memory contents, to the VR-500, the ADMS-3 software can read receiver contents. That's useful when travelling.

A "dumb" two-wire send/receive cable with a DB-9 and a plug for the VR-500 comes with the software. Note that a "real" COM port is required. The circuit board in the DB-9 hood requires 8 VDC (supplied by the PC). Our Entegra USB-to-serial port adapter (creating a COM3) was recognised, but it did not communicate with the VR-500; RT Systems tells us that their Belkin USB-to-serial port adapter does pass the 8 VDC, but we did not confirm this. We were required to use COM1 on our PC.

As we continue to use the software program we still believe the Windows software is a worthwhile investment, especially if one changes sets of frequencies for events – such as the Formula 1 race – or travels on business

In addition to the main memory page, other "tabbed" pages allow customisation of the receivers' many features buried in the sub-menus. These screen shots illustrate the capabilities of setting up the VR-500.



This screen enables customisations of the VFO scan, including limits, and bandscan function. The maximum delay on a scan pause is 12 seconds.

BBC TO DROP SHORTWAVE TO AUSTRALIA AND NEW ZEALAND

Dr. Kim Andrew Elliott of the Voice of America's Communications World media program broke this story on May 8.

The shortwave listening community in North America was rocked by the news on Tuesday that BBC World Service will stop transmitting on shortwave to the United States and Canada as of July first. World Service shortwave to Australia, New Zealand, and the Pacific will also end. A statement from the BBC said emphasis would shift to delivery to these regions through FM rebroadcasting outlets and via the Internet. Dropping shortwave to the United States, Canada, Australia, and New Zealand will save BBC 700,000 [US] dollars per year, money which will be used to increase the FM and Internet of World Service. BBC said it would also drop shortwave broadcasts in Hungarian, Bulgarian, and Slovak, in favour of FM and medium wave delivery.

The BBC decision sparked a flurry of reaction on Internet mailing lists and newsgroups devoted to shortwave that was, predictably, negative. Some listeners see this as the begin-

ning of the end for shortwave broadcasting. However, BBC says it is actually investing in shortwave facilities to reach other parts of the world, including the Middle East, the Gulf region, and Asia.

BBC World Service would not reveal how many listeners it has in the United States, but it did say that 88 percent of their audience in North America listens on FM, and only 12 percent listens exclusively via shortwave.

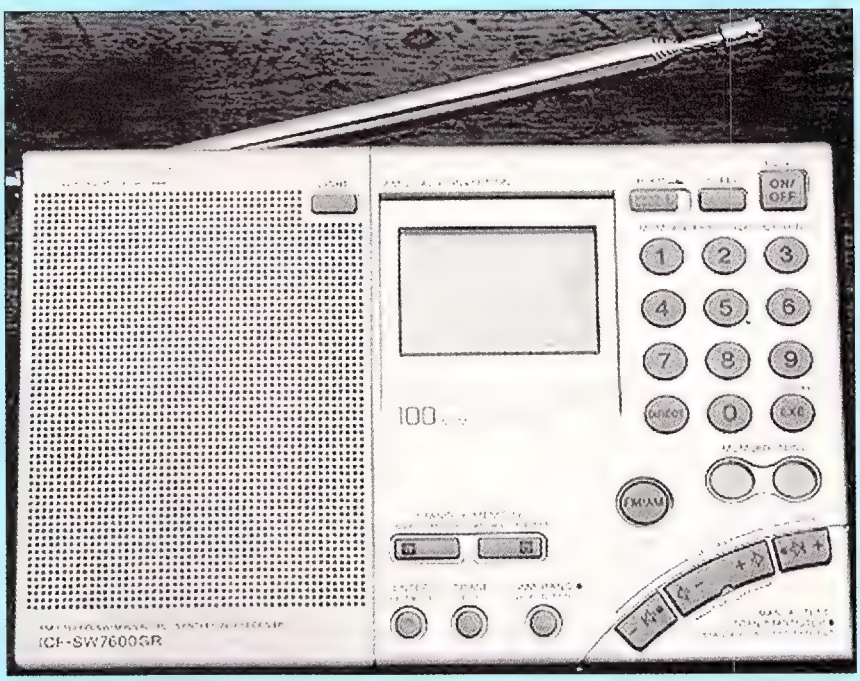
In Canada, the BBC is only available on the CBC Overnight Service. Comments by writers in the SWLPROGRAMS discussion group in Topica (http://www.topica.com/) suggest the situation is much the same in the USA. Low-powered non-commercial national public radio stations air limited programming in the early morning hours.

In response to the outcry, the BBC says it is available on FM in some 200 cities in the USA. The Internet feed is alive and well, and will expand. Those on dial-up lines will no doubt suffer degradation. The US market has two competing satellite subscription radio systems – Sirius Satellite Radio and XM Satellite Radio – for automobiles. Neither is operational yet, but one intends to carry World Service news and the other to carry features and documentaries. We seriously doubt whether either subscription service is viable at US$10-12/month. A dedicated BBC listener would have to pay $23 month in total. We think not.

What does all this mean for Australia and New Zealand listeners? Clearly the Internet is not a viable option given telephone and Internet Service Provider fees. As we write this it is not clear to us what the FM coverage will be. We are not aware of any planned mobile satellite radio system. Perhaps BBC programming may be distributed on some cable TV systems in populated areas. For those away from the urban centres, it may be time to put up a better outdoor antenna, upgrade the receiver and be prepared to listen broadcasts directed to Asia.

We think the BBC is making a very big marketing mistake in this move, but the BBC management claims this move comes out of 10 years of study. In our opinion, the world is not yet wired and shortwave remains the one free, mobile, low-cost portable service that cannot be shut down by gatekeepers.

Join the Topica discussion group and check out the latest information, and be sure to listen to Communications World (http://www.trsc.com/cw/) on the Voice of America UT Saturdays. This story is bound to have more twists and turns in it as it moves from our keyboard to your mailbox.



SONY ICF-SW7600GR

The ICF-SW7600G, a popular portable receiver noted for good selectivity and synchronous detection, was limited in the number of memories. The "G" was discontinued in December, and in April 2001 – at least in North America – the replacement "GR" appeared. The ICF-SW7600GR has 100 memories, and is also built in Japan. Other changes are less significant. In addition to a titanium-coloured case, there are now two clocks, and the attenuator is now variable.

We like the portable, selling for US$170 from USA dealers, and gave it 5 out of 5 stars in our review appearing on the Radio Netherlands' Media Network's Receiver Shopping List pages: http://www.medianetwork.nl/. We note, however, that it probably is not worth it for a current -7600G owner to upgrade to the "GR" model for performance reasons. We perceive no significant differences between the models.

At the end of April, we looked at over two dozen vendor sites around the world. Not even the SONY Web site had the "GR" model posted. As we write this, we do not know the import status into Australia or New Zealand, nor do we know the suggested price. Aside from the two USA mail order dealers, every other vendor was listing the ICF-7600G. If you are in the market for a "G", you may want to ask and wait for the "GR."

By the way, if you are as confused as we are over all the radios using the 7600 model number, take a look at the SONY 7600 Series Page at http://home.t-online.de/home/jgrossklass/sony7600.htm. We found the bloody number has been shopped around since 1978. This is a fascinating compilation.

QUICKIES

PostInfo claims to be address management on the Web. While it is oriented towards firms that do mass mailings, some of the entries off the main menu may be of interest. "Postal Authorities" lists 135 official Websites of postal authorities around the world. There are postal code search tools and postal rate calculators and maps on line as well. Check it out at http://postinfo.net/links/.

SyncIT has a bookmark management service that looks quite interesting. "BookmarkSync is the only FREE, real-time automatic synchronisation service that allows you to access your bookmarks, favourites and favourite files from any computer or any browser, without changing the way you use the Internet." It works with Windows and MacOS. We haven't tried this yet, but it's on our list to do so. Let me know what you think: http://www.syncit.com/.

We took a bad fall from a ladder at the end of April, and severely fractured our right heel and badly sprained the ankle. We've been mostly confined to bed – keeping the foot elevated – for May and most of June, but we should be back in full force next month. By the time you read this we hope to be walking and driving again. Let us know what you've discovered. E-mail us at trs@trsc.com. Visit us at our Web site: http://www.trsc.com/

Russell Bryant looks at Trunk Tracking and says

IT'S A WHOLE NEW BALLGAME

For those such as myself who are captivated by the fact that scanning a trunking network no longer presents a challenge, understand that a good deal of what we mastered pertaining to scanning is no longer applicable

Elsewhere in this month's issue, I have reviewed the UBC780XLT mobile or desktop trunk-tracking scanner from Uniden.

As far as Australia is concerned the UBC780XLT is the second trunking receiver to be sold here, the now familiar UBC245XLT handheld being the first.

Since the release of the UBC245XLT more than 12 months ago, the hobby of scanning has undergone a dramatic reformation. For those like myself who are captivated by the fact that scanning a trunking network no longer presents a challenge, understand that a good deal of what we mastered pertaining to scanning is no longer applicable.

For example the concept of recording frequencies and their users has been replaced with a fresh objective. The new target of our listening attention is the trunking talk group ID that tags the users of a trunking system. Once the frequencies belonging to a trunking network have been entered into your scanner, you can for the most part ignore them for they rarely change.

Despite the time trunking scanners have been available, there still seems to be a degree of confusion, not only among those firmly committed to trunk scanning, but also those wish to partake.

Trunking has been in Australia for a number of years now. Initially it was the sole domain of commercial users, and widely populated by couriers, security companies and the odd tow truck company. However more recently several government-sponsored trunking systems have appeared here, with Queensland, Western Australia and the Northern Territory being the only states without a trunking government radio network of some description.

The partially completed South Australian Government Radio Network or SAGRN for example, is now the RF home of a significant number of government departments, agencies and authorities in that state. Notwithstanding any problems that may arise, other departments will vacate their present and outdated radio systems, migrating to the SAGRN over the next year or so. The SAGRN uses trunking as the basis for a common statewide radio structure, rather than a limited-coverage, exclusive-user radio system.

For just on six years scanning enthusiasts in New South Wales have been monitoring the NSWGRN for radio traffic relating to the emergency services and other government authorities, using both conventional scanners and more recently trunk-trackers. The NSWGRN, like its South Australian counterpart employs Motorola Smartzone Trunking protocol. So with the amount of trunking now in use, together with the very popular UBC245XLT as well as the arrival of the even-better UBC780XLT I thought it a good idea to cover the basics of how trunking works, as well as the different types available.

While trunking itself has been a part of the two way radio industry for some time now, scanners that can properly track a trunking conversation are relatively new to the hobby radio scene.

This is dedicated to those who had given up hope of ever listening in on a trunking system again.

While trunking itself has been a part of the two-way radio industry for some time now, scanners which can properly track a trunking conversation are relatively new to the hobby-radio scene.

Initially enthusiasts who wanted to listen in on a trunking network were restricted to an "all or nothing" approach. That is, there was no way of removing.unwanted signals from the desired ones. However, as with all things technological, it didn't take long for a partial solution to the problem to appear - something which permitted discrete monitoring of specific trunking radio users.

Trunker is a revolutionary software package that takes the radio enthusiast into this new world. With some prudent manipulation of the program, users can silence the undesirable signals, allowing only the audio of the intended group or groups to reach the scanner's speaker.

While the trunking software went some way to addressing the problem of tracking a conversation on a trunked network, it had one severe drawback - mobility. At least two scanners and of course a computer are needed to take advantage of what the program has to offer.

This largely restricts the user to monitoring in the home, office or monitoring-shack environment. Hobbyists called for a range of receivers which enabled monitoring on the go, either on foot or in the car.

The American-based Uniden Corporation, better known for its development of general scanning radio receivers, accepted the challenge to produce a portable scanner which could track trunking conversations. The innovative BC235XLT handheld trunking scanner was released at the end of 1996 and quickly developed a keen following, mainly in the US. Soon after a number of desktop and mobile models from a variety of manufacturers filled the gap.

The BC235XLT, together with various other models it engendered, never made it to Australia. For technical reasons the BC235XLT was not suited to operations here. First, it was restricted to trunking the 800 MHz band only, with a portion of that band removed due to legal restrictions in the US. This limitation, as well as being isolated to a couple of Motorola protocols, meant it didn't have local appeal.

Almost three years later, Uniden, after considerable input from enthusiasts worldwide, devised an upgrade of the now celebrated BC235XLT that not only trunked Motorola, but also the Ericsson EDACS trunking protocol, together with VHF high band, UHF, and 800 and 900 MHz networks.

The BC245XLT has, like its predecessor, breathed new life into the scanning hobby in many countries. For many of the scanning hobbyists in New South Wales, the introduction of the government radio network meant the loss of a number of emergency services and other government departments from the more-easily-scanned VHF and UHF bands.

This cut their listening pleasure by about two thirds, with the ambulance and fire brigades moving to the GRN. This migration made it difficult, but not impossible to keep an ear on the action. It was not unlike the early days of 800 MHz trunking, having to listen to all, in order to hear the desired.

The arrival of the Uniden UBC245XLT in Australia changed all this. While the impact of the UBC245XLT on trunk monitoring in this country was huge, the impact of the UBC780XLT is going to be even bigger. Now for around $500 or $650 respectively, the trunking monitor can move freely about with handheld or mobile ever-ready to keep a discrete ear on those services that matter. Which brings us to the next question. What is trunking and why do I need a trunk-tracking scanner?

Trunked radio first appeared in the US in the mid to late 80s in response to users' concerns over increasing spectrum costs as well as crowding of the VHF and UHF bands.

Trunked radio systems offer a number of advantages over conventional two-way radio networks. Most two-way radio systems are organised into channels; a channel is usually assigned to a group of radio users based on common responsibility or geographic location.

In a conventional two-way radio environment, it is usually only large system users which can afford to devote separate channels to each group or sub agency. Trunking on the other hand provides a more economical and spectrum-efficient method of assigning channels or as they are better known, talk groups, to a large number of users.

HOW DOES A TRUNKING SYSTEM WORK?

As a foundation, each system sustains a number of repeaters, similar to those found in a conventional network. Repeaters can be located on singe or multiple sites. Either way, each repeater is located to insure optimum coverage.

While the minimum is usually five repeaters, it is possible for a trunk system to have up to 28. In some trunking systems repeaters can handle both data and voice traffic, but this largely depends upon the type of protocol employed.

Technically things vary as well. In a Motorola system, for example, one repeater is assigned to transmit and receive the data that is required to keep the system on the air. This is called the control channel while the other repeaters are designated as voice channels.

Because the control repeater is continuously transmitting and receiving data, it is placed under an intense load. To ensure each repeater receives the same amount of use, the control channel is often cycled through the other available repeaters every 24 hours.

Most trunked radio systems use a central controller which monitors system operations according to the needs of subscribers. One system that does not use a dedicated control channel is logic trunking radio. Instead it has a distributed logic system which provides voice and data on the same channels. It is commonly referred to as a LTR trunking network.

LTR differs from Motorola in that each transmission on an LTR system contains a digital sub-audible data component. The US communications company EF. Johnson employs LTR in its system. Each trunking subscriber consists of a control station or base unit, together with a mixture of radios, including in-car mobiles and portables. Each radio contains a unique code word that identifies it to the system and the talk group to which it belongs. Now, for the first time the UBC780XLT offers Australian users the opportunity to track LTR systems.

LTR presents the user with a unique predicament. Unlike Motorola, where frequencies can be entered into memory channels in any order, frequencies for LTR systems must be programmed in a specific sequence. Unfortunately there is no easy way of determining this sequence.

Another trunking protocol which requires a degree of judicious attention to programming is Ericsson's EDACS. The operation of EDACS is described later on.

By far the most commonly encountered trunking protocols in Australia is either Motorola's Smartnet or Smartzone system. When a Motorola trunking system is idle, that is no one is talking, all radios sit on the control channel. which is constantly sending out a data signal called the outbound signal word or OSW. The OSW is received by all subscriber radios.

A central controller is also monitoring the control channel waiting for a subscriber to make a call. When the PTT of a microphone is pressed, a burst of data, known as the inbound signal word or ISW is transmitted to the control channel. This identifies the individual radio and its talk group.

The network central controller then assigns a voice channel to the talk group belonging to the radio which initiated the call. All affiliated radios are then switched to that voice channel frequency by another burst of data over the control channel.

All radios not associated with that user ignore the data and continue to monitor the control channel.

When the call is completed, all nominated radios revert to the control channel. This process is repeated each time a subscriber needs access to the system, with voice channels being assigned on a first in/first out or FI/FO and on an as-required, as available basis. This is known as dynamic channel allocation or DCA. There are a number of Motorola trunking protocols available throughout the US and the world generally. Two of the most common are categorised as either Type I or Type II. They operate as follows:

• **Motorola Trunking Systems**

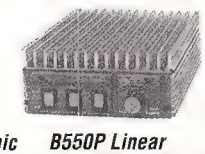
Motorola Type I is the original Motorola protocol that used fleets and subfleets. Each subscriber was assigned a specific number of fleets, and then each fleet the required number of subfleets together with radio IDs. The distribution of fleets

Enhanced Radio Communications

DIRECT MAIL SPECIALISTS

Linear Amplifiers ..... $Best prices
ATU matcher/SWR/PWR $149
Power supplies: 40amp continuous, digital V&A readouts $469
• 20 amp and thermo fans $249
• 30 amp $289
Antenna Rotator, quality, only $229
ANTRON A99 (USA) durable fibreglass, high gain, 26 to 33MHz, great for DX. Includes Groundplane kit! $369
Receive Preamps fully variable $69
4 way antenna switches $69
New desk power echo mic with two roger beeps $149
D104 Silver Eagle polished chrome, crystal insert pwr mic $269
UHF 35 watts, 100ch & VFO, easy programming $739
Antron mobile antennas, high power, best quality $89
NEW "MESSENGER" USA linear amps 125-500w ..... BEST QUALITY!
FREE CATALOGUE AND PRICE LIST ..... ***CALL NOW!***

DRAGON/RANGER/GALAXY/MAGNUM DELTA FORCE
AM/FM/SSB radios at best prices!
WE WON'T BE BEATEN ON PRICE! COD Okay!



Magnum Delta Force *Silver Eagle D104 mic* *B550P Linear*

MAIL ORDER DEPARTMENT: PO BOX 59 W.T.C. MELBOURNE, VICTORIA 8005
PH/FAX 7 DAYS: (03) 9527 9920, 0414 771 101
email: erc@alphalink.com.au ERC1200PA

KYLE communications

YOU WILL NEVER BE OUT OF CONTACT WHEN YOU DEAL WITH US!

RFDS HF RADIO

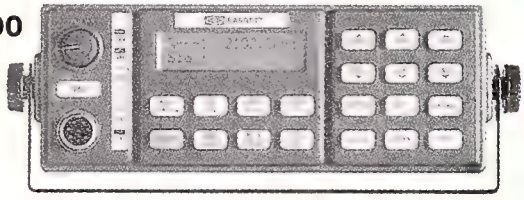
CODAN ● BARRETT ● QMAC

CODAN NGT with auto tune antenna **$4600**

BARRETT SB950 (pictured) with auto tune antenna . **$3100**

QMAC HF90 with auto tune antenna **$3100**

ALL UNITS COME WITH SELCALL AND TELCALL



ICOM *when only the best will do*

RECEIVERS
IC-R8500
IC-R75
IC-PCR1000
IC-R10
ICR2

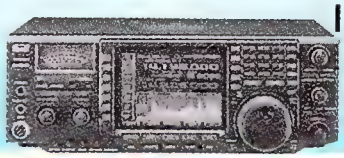
UHF CB
IC-40S
IC-F2010

IC-R8500

AIR BAND
IC-A4
IC-A4C
IC-A22
IC-A22S
IC-A200
IC-A110

MARINE BAND
IC-M1
IC-M45
IC-M59

AMATEUR BAND
IC-756PRO
IC-746
IC-706Mk2G
IC-718
IC-2800H
IC-207H
IC-T8A
IC-T81
IC-Q7



IC-756PRO

WE HIRE

HF RADIOS ● SATELLITE TELEPHONES ● OPTUS MOBILE SAT ● INMARSAT ● VODAPHONE/GLOBALSTAR

ONLY BUY ICOM FROM AUTHORISED ICOM DEALERS

Call or write to MARK for more info: 668 Lutwyche Rd, Lutwyche, Brisbane 4030

Ph 07 3857 4400 Fax 07 3857 7825 Mobile 0408 72 4272

Website: www.kyle.com.au Email: mark@kyle.com.au

and subfleets on a Type I network is controlled by the fleetmap.

Motorola Type I has a limited number of IDs that a fleet or subfleet can carry.

On the other hand, Motorola Type II is the second-generation Motorola protocol. It replaced fleets and subfleets with a series of talk groups and discrete radio IDs. There are no fleetmaps, therefore no limitations on how many radio IDs can be assigned to users.

A third, but less-likely departure, for Australia at least, is a Motorola Type IIi Hybrid network. This is a combination of Type I and Type II protocols. It consists of talk groups of the type found on Type II networks, and fleets/subfleets of a Type I system. Type IIi Hybrid systems are usually found when a network manager is converting from a Type I to a Type II system, and they need to support both protocol types.

Motorola Privacy Plus refers to the older Type I system. There are few, if any, Type I systems in Australia, with Type II being available around the time trunking was first introduced here.

Smartnet is a set of trunking characteristics common to Type II networks and generally only made available to government users. It includes improved security, dynamic regrouping, emergency signalling and remote radio monitoring.

A Type II Smartnet system can support up to 28 system channels, 65535 individual radio IDs and 4000 talk groups.

Smartzone is simply a term for a number of Smartnet Type II networks linked together with RF links, microwave bearers and/or landline to provide wide-area coverage. Users are affiliated with a given site and a given talk group, allowing the radio to communicate with other radios on different sites but in the same talk group.

Many large public safety organisations in the US have established Smartzone systems to provide wide-area communications. The NSW GRN and SAGRN are Smartzone systems.

• Ericsson Trunking Systems

Ericsson's Enhanced Digital Access Communications System or EDACS is, as the name suggests, a digital trunking protocol that also supports an analog component and integrates voice communications and data at 9600 baud, into a single communications system.

Ericsson EDACS can accommodate 2000 talk groups per system, it offers both private talk groups and emergency mutual aid groups, as well interconnection to the telephone system and the use of mobile data terminals.

EDACS was originally designed for police and emergency service groups, where reliable disaster communications are crucial.

Ericsson AEGIS digital voice offers transmission security. Like Motorola, Ericsson uses a sophisticated computer to control the trunking capabilities of the radio system via a control channel. With EDACS, system channels are used to send both voice and data between radios. It differs from the Motorola protocols, in that each transmission is assigned a new frequency. To further whet your scanning appetite, as transmissions move from frequency to frequency, the new Uniden UBC780XLT, together with the older UBC245XLT is able to follow it seamlessly, something previously not possible when using a conventional scanner.

• Digital and Encrypted Transmissions

Networks that use digital trunking systems or decode encrypted transmissions cannot be tracked - at this stage. Where an analog transmission has been encrypted using voice inversion, frequency inversion or similar, likewise these are beyond our ears, as there is not equipment available that will resolve the broadcast back into intelligible speech.

Don't be dissuaded by the perceived difficulty in understanding how trunking works. Once you master the programming of either the UBC245XLT handheld or its latest sibling the UBC780XLT, the modus operandi of trunking will become apparent.

That, as they say is that, for another month at least. As always my address is: PO Box344 Springwood NSW 2777.

Don't forget — we stock MOBILE ONE CB, AMATEUR and Hi Performance mobile phone antennas at Rob's great prices

Check out Crazy Rob's used radio and equipment on our website or ring and we will send you a list. Also, we will be starting a new list of bits and pieces. We only sell the best...

HARRIS Communications

78 Elgin Street Carlton Vic 3053

Ph: 03 9347 6264 Fax: 03 9347 3629

TET-Emtron Antenna Systems

TET THREE BAND HF BEAMS	DISCOUNTED PRICE
TE-23 3 band 2 Element Beam 14-21-28 MHz	$515
TE-23M 3 Band 2 Element Mini Beam 14-21-28 MHz	$530
TE-33 3 Band 3 Element Beam 14-21-28 MHz	$723
TE-43 3 Band 4 Element Beam 14-21-28 MHz	$910
TET Four Band HF Beams	
TE-34 3 Element Beam on 14-21-28 MHz, 1Element on 7 MHz	$850
TE-44 4 Element Beam on 14-21-28 MHz, 1 Element on 7 MHz	$995
TET Six Band Beams	
TE-26 2 Element Beam on 14-21-28MHz, 1 Element on 10-18-25MHz	$835
TE-46 3 Element Beam on 14-21-28MHz, 1 Element on 10-18-25MHz	$953
TE-56 3 Element Beam on 14-21-28MHz, 2 Element on 10-18-25MHz	$1156
TET Seven band HF Beams	
TE-47 3 EL Beam on 14-21-28MHz, 1EL 10-18-25MHz, 1EL 7MHz	$1107
TE-57 3 EL Beam on 14-21-28MHz, 2 EL 10-18-25MHz, 1EL 7MHz	$1230
TET 27MHz CB Dual Drive Beams	
TE-311HB 3 Element 10/11 Meter Beam	$192
TE-511 HB 5 Element Beam	$278
TET Rotatable HF Dipoles	
TE-13 3 band Rotatable Dipole 14-21-28 MHz	$247
TE-13W 3 Band Rotatable Dipole 10-18-25 MHz	$268
TE-26 6 band Rotatabale Dipole 10-14-18-21-25-28 MHz	$835
TET Wire Trap HF Dipole	
ED-52C 3.5 to 30MHZ Wire Trap Dipole (for Amateurs & Shortwave)	$203

All prices subject to change without notice and are PLUS FREIGHT

Australia's Premier CB Radio Shop

CB HF 28/27MHz RADIOS		
GALAXY	Saturn Base 6 Band 50W + Freq Counter	
DIRLAND	DSS9000 520Ch AM/FM/SSB/CW/25W	
DELTA FORCE	Magnum with AMT & ECHO	
SUPERSTAR	3001 40Ch 27MHz (Ext Freq Price on req)	
MAGNUM 357	New Ideal Base or Mobile 150W	
ZETAGI LINEAR AMPLIFIERS		
B-150R	Linear Power Amp 26-30MHz 110W 13.8V	
B-300P	Mosfet Power Amp 26-30MHz 240W 13.8V	
B-550P	Linear Power Amp 20-30MHz 320W 13.8V	
CONNEX	Linear Power Amp 3-30MHz PreAmp 225W	
SILVER777+	Linear Power Amp 3-30MHz PreAmp 300W	
POWER SUPPLIES		
DIRLAND	PS22 22Amp Power Supply (SPECIAL PRICE)	
SPECTRUM 400	5/8 16 Radials 5.5dB	

Ring CRAZY ROB for the best deal on all CB equipment!

Oh What a Feeling – ICOM!

RECEIVERS/SCANNERS – all prices discounted		
IC-PCR1000	PC Receiver	*Scanner in a Computer*
IC-PCR100	PC Receiver	*Ideal to Eavesdrop*
IC-R75	Receiver	*The Receiver of the Future*
IC-R3 (New)	Receiver	*Covers .5-2.4GHz - even watch TV!*
IC-R8500	Receiver	*With all the Bells & Whistles*
IC-R10	Receiver	*All mode & 800 mem ch*
IC-R2	Receiver	*Little, but big in performance!*
UHF CB RADIOS		
IC-F2010	UHF 160ch	*The Best UHF CB/Comm*
IC-40S	UHF 40ch+20CB	*For all Occasions*
IC-40 Jnr	UHF 40ch CB	*It's a little beaut*
IC40GX	UHF 40ch CB	*Plus Extras*
AMATEUR TRANSCEIVER		
IC-910H NEW	2/70/23cm (opt. UX-910)	*The Innovator*
IC-718	HF Transceiver	*What a radio! It has the lot!*
IC-706IIG	HF/6/2/70cm	*The Secret Weapon*
IC-746	HF/6/2	*The Destroyer*
IC-756PRO	HF/6 Transceiver	*The Battle Ship*
IC-775DSP	HF Transceiver	*The Flag Ship*
IC-2100H	2 Meters	*Single band with loads of grunt*
IC-2800H	2/70cm	*The Innovator*
IC-207H	2/70cm	*Base or Mobile*
IC-T8A	6/2/70cm	*Three bands in one*
IC-T7H	2/70cm	*For those who want two Bands*
IC-Q7A	2/70cm	*Big Things Come in Little Boxes*
IC-T81A	6/2/70/23cm	*The all-new quad bander*

Ring CRAZY ROB for the best deal on all ICOM equipment!

E&OE www.harrisguns-n-radios.com

A RESPONSE TO THE MARTIN LUTHER PAPER

David A. Pilley VK2AYD WIA Federal Director. davpil@midcoast.com.au

In the March/May edition of Radio & Communications we printed a precis of a discussion paper prepared by Martin Luther, VK5GN. This reply is from David Pilley, VK2AYD, who is a newly elected Federal Director of the WIA.

The "Martin Luther Paper", as it is becoming know as, has certainly raised much discussion with the Amateur Radio fraternity. It is good to see some one has the needs of the Australian Radio Amateur at heart. Some statements made have merit, others are totally without foundation.

Looking at the WIA from the outside you will provide a very different picture than looking at it from the inside. From the outside you have to use your imagination with those subjects you know little about. From the inside you can explore and find the information you seek. I chose not to criticise from the outside, but to become an active member from the inside and use my expertise where it can be best applied.

Before a person, organisation, or business can move forward they must first determine exactly where they are standing now. If you don't know where you are standing your first move could be in a swamp and we all know the alligator story.

As "the new boy on the block", I have spent my first month in office studying just where the WIA is standing right now and whilst doing so I kept the thought in the back of my mind - "is there a better way?" So let me explain my findings and at the same time answer some of Martins' comments from his third paper which was based on the replies he received from the readers. As you will see, most of what Martin wrote about is in place. The problem has been communicating it to the fraternity. I hope this will be a start.

I am sure that many who read this have no idea of the hundreds of voluntary hours that are dedicated to the Institute and keeping our hobby possible.

1. "MEMBERS TO OWN THE ORGANISATION."

They already do.

The organisational structure, used by the WIA, is exactly the same as our own government. The same as all overseas Radio Societies use, the RSGB, ARRL, etc. Even the CWA (Country Woman's Association) of Australia uses the same structure. If the ladies of Australia can make it work, so can we!

SO WHAT IS THE STRUCTURE?

The structure is sequential.

It has a Federal Executive, comprising a President and 3 Directors.

Each State/Territory also has a Divisional Office with its own President and Directors, together with a nominated Federal Councillor.

Let's look at a comparison - our own Federal government! It is something that we are all aware of and should be able to relate to. I have not included State government or the interfacing they have with Federal.

In politics you vote for a party headed by a local Representative.

In the W.I.A your Representative is a Division and you vote for the Officers in that Division.

In politics your requests to the local MP is either actioned by him or passed to the Minister responsible.

In the WIA your request would go to your Division where it is either actioned or passed to the Executive.

In politics if you feel you want to write to the Minister direct you can. He may pass it back to your MP to action or pass it to a Committee for action.

In the WIA you can write directly to the Executive who will consider your request and either pass it back to your Division or to a Committee.

In politics you "own" the Government (although you may not agree with me there!).

In the WIA the members own the WIA You vote for your local Divisional Officers. Unlike politics, we do not have parties. We are of one fraternity.

At a Federal Conference each Divisional Representative, known as a Federal Councillor, has one vote. Just the same as in politics when your local member votes.

If we gave every member a vote direct at the Federal level, then NSW and Victoria, who have more than 50% of the members, would control the WIA

I think you will agree that is not very democratic.

Perhaps we do have some problems with Divisions trying to run their own show. No different to politics. Changes here are necessary and is being addressed.

2. "THE CHANGE MUST BE SIGNIFICANT"

Unfortunately this is just a statement and "change" is undefined, yet Martin wants it NOW!

However, let me assure you, changes are already underway. At the time of writing this the Councillors and Executive

were working hard on the latest ACA Discussion Paper concerning examinations and future administration. If you are not aware of this I would suggest you visit the ACA web site www.aca.gov.au or talk to your local W.I.A office or representative. It concerns you.

3. "SERVICES ARE IMPORTANT, BUT IN GENERAL, DO NOT MOTIVATE PEOPLE TO JOIN"

Services!

Have you ever wondered just what services the WIA provides behind the scenes?

Let me enlighten you on just a few that are so important to our wonderful hobby.

We have active Committee's for Education, Examinations, AMSAT, Publications (e.g. Call Book), "Amateur Radio" Magazine, Contests, IARU, Repeaters, Representative on the Australian Standards Assn., EMR, EMC, QSL bureau and lots more, not forgetting the ACA Liaison Committee who, without them, we would not be so well off with our hobby here in Australia. These Committee's work for the good of all Radio Amateurs whether they are members of the WIA or not. The difference is through their magazine they are aware of what is happening around us. Not just throwing stones from the outside. We're grateful to every member who supports these efforts through their dues and especially to the members who go beyond their basic dues and offer personal assistance.

Who, other than the WIA, is out there fighting for your frequencies. Tell me, I need to know?

4. "PUT AMATEUR RADIO BACK INTO THE WIA"

Did it ever leave? I think not. In recent years membership has declined, but no where can I find members left because Amateur Radio had left the WIA

Over the past 50 years Amateur Radio has changed considerably and I've been licenced that long to see the changes. Fifty years ago most equipment was home built and there was only one grade of licence to which you had a probation period of one year with regular inspection by the authorities.

As WW II equipment became available we became "modifiers", changing the surplus equipment to suit our needs. Some years later the commercial equipment arrived. CB was born and many of the new Amateurs became "appliance operators".

They had come from a system that was free and many expected the WIA to be free. To introduce them to Amateur Radio new grades of licences were introduced.

Over these 50 years the modes of transmission have also changed. SSB and many digital modes are now with us. Some have been and gone. Typically Packet Radio which, although used still has declined in use and will soon be passed over. Just like CW!

So we have to find new ways to attract members. I would be delighted to hear from non- members why they are not members of the WIA and what they need to convince them to join. I would also like to hear from members what their thoughts are.

LET'S COMMUNICATE.

Yes, I discovered that in the past, someone had insisted that our journal, "Amateur Radio" be only Australian content. NO MORE! We need to know what is happening around the world, new innovations, etc., and "Amateur Radio" will now include this.

Another change taking place and we hope members will subscribe more articles to this excellent journal.

The criticism of the past business administration may have some merit. We plan to rectify this. Thanks to the work by past Director John Loftus, VK4EMM and June Fox, the Federal Board now has detailed budgets to work with. Immediate Past President Peter Naish, VK2BPN has stayed on as Secretary.

Talking of budgets, let's just look at how the WIA in financed.

The Federal WIA needs a certain amount of income, which is derived from membership dues, to support the Committee's and produce "Amateur Radio" each month. These Committee's include the need for delegates to represent us to the ACA and to the IARU to protect our frequencies and needs. Money doesn't grow on trees, but don't we all wish it did!

Each Division has expenses. For example the VK2 Division has 28% of the membership and operates an office, book shop and various sub-committee's needed in NSW. These sub-committee's are linked to the Federal Committee's. All this requires funding. In comparison VK7 only represents 4.3% of membership. Per member it will require more funding than NSW. Thence the difference in membership fees.

We need to find a better way to amortise this and it is in the objectives for 2001.

5. "THE WIA SHOULD BE AN OPEN ORGANISATION"

I heartily agree and by writing this response to Martins paper, I hope it will be the start. In real business, the only confidentiality, as I remember, was salaries! We'll keep it that way.

The Federal WIA has four new Directors. Ernest Hocking VK1LK as President, supported by David A. Pilley VK2AYD, Brenda Edmonds, VK3KT and Don Wilschefski, VK4BY. All of these are approachable and want your views, whether you are a member or not.

The WIA needs the support of all Radio Amateurs in Australia so let's pull together as one.

In closing may I add that Martin and I are good friends. Together in 1996 we proudly represented Australia in the World Radio Team Championship in California. We are both strong competitors in most worldwide contests and we're in it to win it!

I respect Martins knowledge and his comments and ask him, as I ask you, if you have a constructive comment on how to better the WIA, before you whinge, write to your local Divisional Office or direct to the Executive. Make sure it includes a logical solution that can be implemented within the capabilities of the availability of our fraternity and has a positive return to all Radio Amateurs. Remember, the Executive and Divisional Officers are all volunteers. We willingly do it to better Amateur Radio in our country FOR YOU.

COMMUNICATION IS THE NAME OF THE GAME. LET'S COMMUNICATE.

Be your own weatherman.
Why wait for a professional weather report when you can have it at your fingertips anytime you want. The Weather Monitor II offers the most complete state-of-the-art weather monitoring system you can buy.
FEATURES INCLUDE:
•Inside & Outside Temps
•Wind Speed & Direction
•Inside Humidity
•Time & Date
•Barometer
•Wind Chill
•Alarms
•Highs & Lows
•Instant Metric Conversions
•Outside Humidity & Dew Point Option
•Rainfall Option
•Optional PC Interface
WEATHER MONITOR II
SOLAR FLAIR PTY LTD
P.O. Box 18, Emerald, Vic. 3782
(94 Beaconsfield Road)
Ph: 03 59684863 Fax: 03 5968 5810

EMTRON

The following models are available from EMTRON: DX-1b, DX-2, DX-2SP and DX-3.

All EMTRON amplifiers are of similar design, modular construction for easy service and most modules are inter-changeable withing the EMTRON range of amplifiers. All EMTRON amplifiers also have identical features. (See DX-2 features on our web site: www.emtron.com.au). We would also like to point out, that due to extremely effective and advanced design of the control and protection circuitry, so far, we never had to replace a single tube in any of our amplifiers.

DX-1 has now been replaced with the new model DX-1b which is a very much improved version of DX-1. The DX-1b has all the functions or features of the DX-2, (the unique Emtron phase controlled triac soft start, and the same cooling system) except the power output. It can run 800 watts key down indefinitely, or for as long as you want, or 1000 watts PEP.

Emtron's most popular amplifier world wide is certainly the DX-2 & Dx-2a. To this unique amplifier we have added the all new and very exciting DX-2SP.

For the connoisseur, who want nothing but the best, Emtron is introducing the very special DX-2SP. This amplifier stands on its own and has no competition. Produced for the military, the SVETLANA GU-84B tube, with plate dissipation of 2500W, when installed in the new EMTRON DX-2SP, produces a solid 2000W continuous RF output (2500W PEP). Besides the tube and a very special high voltage, high current band switch, as well as the mains transformer, the DX-2SP is identical to our unique DX-2.

Last but certainly no least, is the Emtron's "Big Gun"' the DX-3 amplifier. Specially designed for high power applications, with 3000W continuous RF output power (4000W PEP), the DX-3 is quite unique in the world. Again, the DX-3 has all the features of DX-2, however, it comes complete with QSK module as standard.

DX-3

4000 WATTS PEP/3000 WATTS CONTINUOUS!

For Industrial, Scientific, Medical, Broadcasting, Radio Communication and Export. This superior amp has all the features of our now famous DX-2, utilizing one single 3000 Watt plate dissipation high tech tetrode tube.

P.O.A - Call us for more information.

DX-2

The Emtron DX-2/2a is a unique amplifier on the market today. We believe that there is NO OTHER single amplifier which would meet the quality, craftsmanship, reliability and price of the Emtron DX-2/2a.

DX-1B

Now the worlds best one Kilowatter. Has all the features of our now famous DX-2 & DX-3 including unique Emtron soft start and a triple overkill cooling system. Runs 750 Watts key down or 1000 Watts PEP indefinitely.

EPS-20ST

The EPS-20st, the sophisticated 20 amp switch-mode power supply is CE approved. **$249**

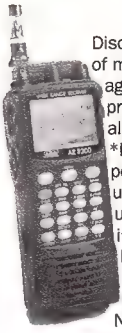
EPS-30A

This unique power supply incorporates 4 x protection (voltage, current, temperature & RF) and a dual CROSS NEEDLE meter for continuous monitoring of voltage, current and DC power. **$599**

FIBERGLASS TELESCOPIC TOWER - 33 FT

Specially designed for antennas. All 10 segments are reinforced three times. The intensive black pigment of the outer material makes it UV-resistant and the segments are individually ground to guarantee the vertical loadbearing capacity.Designed to construct antennas for portable purposes. *total length is 3.8ft - 33 ft *total weight 3.3 lb *designed for portable purposes, quick and easy *ideal for inv. V Dipole, Vertical's and Loopantenna. **$199**

The Best Just Got Better!



Discover why AOR receivers are the choice of many federal, state and local government agencies. Military users, laboratories and professional news-gathering operations also use AOR receivers. *New TXCO for great stability - performance not found in most desktop units! *Brighter backlit display for easy use anytime. *New telescopic antenna included for better reception. *New keyboard layout for easier operation. *Attractive new black case. *Now includes 1100 mAh high capacity Ni-Cd batteries. $1190

AR7030 PLUS!

*Increased balance of the mixer for the greatest IP2 &IP3, *High tolerance 0.1% components in DDS ladder for low noise, *Enhanced RF attenuator operation for minimal intermod, *Higher spec. wire aerial input transformer for minimal mixing products, *Ceramic metal cased 4 kHz (displayed) AM filter fitted as standard, *Bourns optical encoder for the smoothest DX tuning, *Features CPU fitted, 400 memories, multi timers & alfa tag. POA

AR7030

Frequency coverage is from 0-32 MHz all mode: AM, Synchronous AM, USB, LSB, CW, DATA & NFM. **POA**

SDU-5500

The SDU5500 Spectrum Display Unit adds a variety of features to extend a receivers capabilities, such as visually identifying new active frequencies and taking measurements. **$2095**

AR5000

Prior to the AR5000, it took 2, 3 or even 4 receivers to cover this range, plus the small size and low power demands make the AR5000 ideal for field use, remote control radio, and local & remote computer control. **POA**

AR5000+3!

Provides three enhancing facilities. A.F.C; switchable automatic frequency control, noise blanker; switchable to help reduce the effects of ignition noise, and synchronous AM; featuring double and selectable sideband. **POA**

AR3000a

Receive coverage from 100kHz all the way up to 2036 MHz without any gaps in the range.

POA

SCANMASTER

Scanmaster Active Base Antenna

25Mhz-1500Mhz

* Marine * PMR
* Civil Aircraft
* Military Aircraft
* Amateur Radio
* 900 MHz Band
* Plus more public services

SP-55 24-1500 Mhz AMP

State of the art, low noise wide-band pre-amplifier that allows top performance from base & handheld scanners. Runs on 12V, DC external

$230

RF SYSTEMS

DX-1

An active antenna for professional & commercial applications. Its military version has the same specifications! **$1170**

WINI-WINDOM ANT.-Comes with magnetic Balun. Broad-band antenna for portable radios, communication receivers and scanners with shortwave coverage. Ideal for portable receivers, scanners and computer controlled receivers.

DX-7 $595

Active helical short-wave receiving antenna, designed to withstand the worst weather conditions and especially for long distance and weak signal reception. Optional DC adaptor for 12V battery supply.

MLB

Magnetic Longwire Balun makes it possible to use coaxial lead-in cable with all forms of longwire or other types of wire antennas. **$135.00**

DX-10 $99

DX-10 is a low cost high quality active antenna for long, medium and shortwave reception. Designed for indoor as well as outdoor use. The sensitivity of this antennas rises with the frequency. **100 kHz - 30 MHz.**

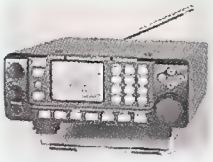
MT ISOLATOR Noise Reducer and Lightening Protector

The MT Isolator is a completely new type of device which separates the antenna completely from the receiver or transceiver. It reduces atmospheric static and man-made noise and interference. It protects transceivers, receivers and operators from static charges and lightening. **$240**

NEW! AR8600

Any time, any place...

WIDE BAND ALL MODE RECEIVER
530 KHZ - 2040 MHZ WITH RS232 PORT



The AR8600 is an extremely versatile receiver which can be used virtually anywhere, mobile, base or trans-portable... powered from an optional 12V d.c power supply, optional d.c lead from a 12V vehicle or from an optional internally fitted NiCad battery pack. A strong twin metal case with die cast front panel characterizes the multi-purpose role. All mode receive capability is provided including Single Side Band with programmable tuning steps down to a resolution of 50 Hz with the frequency established by a highly accurate Temperature Compensated Crystal Oscillator (TCXO). An RS232 port further extends the capabilities with free supporting control software available from the AOR web sites. **$1595**

AEA INSTRUMENTS

AEA CIA-HF
400Hz - 54MHz

***SWR-121 HF:**
1-30MHz Graphical SWR Antenna Analyzer.
***SWR-121 V/U:**
120-175, 200-225, 400-475 MHz SWR Analyzer.
30-150 Analyst: 30-150 MHz graphical antenna analyzer.
***Celimate Analyst:**
806-960 MHz graphical antenna analyzer.

WINRADIO

Expand the power of your WINRADIO with numerous digital modes and utilities. Puts advanced radio receiver technology directly on a PC platform!

*Audio Recorder and playback
*Packet Radio
*Radiofax (HF fax and WEFAX)
*Aircraft Addressing and Reporting System(ACARS)
*Packet Radio
*Radiofax (HF fax and WEFAX) and more!

WR-1000i...$518.95
WR-1000e...$731.23
WR-1500i...$848.49
WR-1500e...$951.23
WR-3150I-DSP...$2,629.44
WR-3150e...$2629.44

TEN-TEC

New Visions of the Future HF Transceiver! Introducing the marriage of the power of PC, Digital Signal Processing and the HF Rig. Combines the power of your PC with a cutting edge ID DSP design. **$1995**

RX-320 PC RADIO

Ask for information on this DSP based receiver. Runs on Windows. **POA**

RADIOMASTER

NEW!

A-50

Wide Band active antenna for long, medium and shortwave.

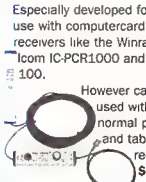
*Freq range 30 kHz -50MHz * In and outdoor use *Omni-directional recep. pattern *Up to 10 dB gain, low noise *1.1m long, 10 m lead-in coax *weatherproof*

$285

A-108

Low Cost high quality active antenna.

Especially developed for the use with computercard receivers like the Winradio and Icom IC-PCR1000 and PCR-100.

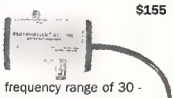


However can be used with normal portable and tabletop receivers. **$299**

AC-108

Antenna combiner for Wideband receivers and scanners.

$155



Covers frequency range of 30 - 108 MHz, the range where neither shortwave shortwave antennas nor discones perform satisfactorily. Is equipped with an adjustable output level to avoid overload of the antenna. Plug in design, no extra cables required.

P-30

Wide Band receiving wire antenna for long, medium and shortwave.

*Freq. range 500kHz - 30 MHz *Just 4 meters long, 4m coaxial cable to the receiver .*In and outdoor use * No antenna tuner required *Built in matching transformer * completely assembled. * Passive, no intermod. or overload. $95

EMTRONICS
First Floor, 94 Wentworth Avenue Darlinghurst 2010
(Above York Opticals Telescope Shop) P.O Box K21 Haymarket, 2000
Phone: 9211 - 0988 Fax: 9281 - 1508
Email: Emtron@ozemail.com.au Website: http://www.emtron.com.au

THE 27MHz DXer

Jack Haden VK2GJH
Email: 27dx@usa.net or PO Box 299 RYDE NSW 1680

Signals from Africa and the Indian Ocean, in our early evenings, seem to suffer from lethal bouts of fading. Sometimes the signal can be salvaged to a certain extent by switching from the beam across to the vertical

Propagation has not been kind to us in recent weeks with the band seemingly closed for hours on end, and then open one minute, closed the next. Signals from Africa and the Indian Ocean, in our early evenings, seem to suffer from lethal bouts of fading. Sometimes the signal can be salvaged to a certain extent by switching from the beam across to the vertical, or vice versa.

CONGRATULATIONS!

I would like to take this opportunity to extend hearty congratulations to Andrew 43-AW-010 who is a regular contributor to the column. Andrew reached two milestones in May; he passed his full call amateur radio licence test and worked his 200th DXCC country on 27MHz. Andrew wrote "I finally passed the full call theory after two previous attempts in the past two years, for me, the CW was the easiest part of the exam having built my speed up to 20 wpm two years ago from scratch. Many people condemn CW as a hurdle against getting the licence, persistence and a willingness to achieve rewarded me with success. Only having a basic High School education I found the theory to be the real demon as my mathematics is very poor. Now I will await the issue of my amateur callsign and cross the final mountain into the realm of amateur radio."

DELTA TANGO MEET

News from Bryan 43-DT-005, the coordinator for the Australia/Pacific chapter of Delta Tango, informs the DX community of radio enthusiasts gathering combined with the Tweed Radio DX Group. To be held over the weekend of the 20th and 21st of October in Ipswich QLD all are invited, regardless of club loyalties. Delta Tango members from WA, SA, VIC, TAS, NSW and possibly the NT will be attending, overseas guests from New Zealand, New Caledonia and maybe Alaska will also be there. The event will be held at the West End Rugby League Football Club, Chermside Road, East Ipswich.

There will be a large buy, swap and sell flea market conducted on Sunday, so bring along your surplus gear and join in the fun. There are other activities planned too, accommodation can be arranged at the Mary Ellen Motel, PO Box 715, Ipswich QLD 4305 or telephone (07) 3281-2100. More information can be obtained from the Delta Tango web site at http://dtaustralia.webjump.com, which will be constantly up dated, as the event gets closer.

There will be a large buy, swap and sell flea market conducted on Sunday, so bring along your surplus gear and join in the fun. There are other activities planned too – accommodation can be arranged! ...

PAS DX GROUP

Don't forget that the PAS DX Group special operations wind up on the 30th of July. On offer are 4-PAS/DX, 11-PAS/DX, 21-PAS/DX, 23-PAS/DX, 24-PAS/DX, 30-PAS/DX, 34-PAS/DX and 147-PAS/DX. QSL routes vary for these calls so check with the operator concerned.

SCOTTISH IOTA BASH

The Scottish IOTA gig gets underway on the 28th of July and concludes on the 10th of August and is conducted by the Sugar Delta DX Group. All stations will sign with the 108-SD prefix oblique the island group suffix. On offer will be Tondra Island (SH-021), Shetland Mainland (SH-001), West Burra Island (SH-022), East Burra Island (SH-023) and Fair Isle (SH-009). The QSL route for all five operations is PO Box 5, Irvine, North Ayrshire KA12-0YN, Scotland.

SILENT KEY 26-AT-119

Some sad news arrived reporting that Martin 26-AT-119 passed away on Monday 07th May. Martin was a popular DXer around the world using a variety of calls, including 26-CA-001 and 26-WDC-04. Some years back, Martin won the AT World Contest and also held many DX awards, he will be missed by many.

WORLD DX FORUM

Disclaimer: All times published are in the UTC/GMT format, QSL routes and IOTA designators are given where known. Information is derived from a number of sources in good faith and can possibly contain some inaccuracies and transcription errors beyond my control.

THE PACIFIC:

Australia was about in an IOTA capacity the other weekend with 43-SD/OC-139 Kangaroo Island quite active around the usual DX traps. Quiet a few in Europe were pursuing a contact keeping the operator active around 1000z. Also reported was 43-TRC/OC-139, probably the same team previously mentioned.

Fiji has been about with Tony 95-LD-010 from Suva heard around 1000z looking for his mates in Europe. QSL via Stefania 1-LD-132 in Italy.

French Polynesia came through quite well at 0008z with Didier 210-RC/OC-046 on Tahiti a good 5x8 at the time. There

weren't too many takers to his persistent calls; maybe Australian DXers are not all that interested in the IOTA programme? QSL to PO Box 17, Nouan-LF 41600, France.

Kwajalein Atoll in the Marshall Islands should be about for the IOTA people with 132-IR-101/OC-028 supposedly active. QSL to PO Box 241M02, Modena 41100, Italy.

The Mariana Islands has been heard on a number of occasions during the past few weeks with 133-FAT/OC-086 on Saipan being very active. QSL to PO Box 63, Caudan Cedex 56854, France. Also noted about was Neil 133-SD-111 at 0445z a good 5x7 in Sydney. Neil requests that cards go via his manager 14-SD-016 in France.

Norfolk Island was doing the rounds at 0800z with many in Europe chasing Peter 130-SP-101. Peter was quite weak here but was getting some very nice reports from Europe. QSL via Abe 43-SP-001.

Rotuma proved to be popular once again with Pita 325-SD-101 having problems with the EU pile-ups. At 0845z Pita was a poor 3x3 in Sydney but getting much better reports from the windbags in EU. Pita will close once 1000 contacts are amassed, QSL to PO Box 444, Inca 07300, Mallorca, Spain.

Sakhalin Island, a Russian possession in the north Pacific, was attracting considerable attention with 302-TRC-162/AS-018 very active. The IOTA chasers in Europe were out in full force at 1045z and quite a pile up developed.

Vanuatu attracted the hurly-burly of Western Europe with the appearance of 197-CA-001 at 0900z. The usual huff and puff associated with excited continentals ensued for some time resulting in endless confusion for all.

EUROPE

Albania is about once again, this time with 251-IO/0 going full steam ahead at 1000z. Although the signal was very weak into Australia, two or three managed to make it through.

Bulgaria attracted considerable attention from Asia and the Pacific with 178-TRC/0 a reasonable 5x5 at 0823z. QSL to PO Box 49, Kazanlak 6100, Bulgaria.

Estonia was very active by way of an IOTA operation signing as 304-AT-103/EU-178 on Kihnu Island. Quite a number of keen European IOTA hunters were in hot pursuit of a contact around 1100z.

Franz Josef Land is one of the rare entities that many find hard to work, so I was rather surprised to hear 305-4KA at 0900z a weak 3x1 at best. There were the usual comments uttered about this one being a slim, work now and worry later is the best method to adopt. Another reported was Valeri 305/302-RRC/0 heard in northern Australia.

Iceland will be about once again, this time as 27-SD/DX commencing on 01st July and winding up on the 31st July. Many in the Asia/Pacific region still need this one confirmed, as Iceland is not all that easy to work from this region. QSL to PO Box 9298, Tilburg 5000-HG, The Netherlands.

Macedonia came through quite well for a few minutes around 0945z the other evening. Although the signal wasn't too strong 332-BRC-101 was quite readable due to the low noise level on the band at the time.

Malta has been reported both on the long and short paths in recent weeks. David 93-SD-124 was 5x7 at 2359z long path. Later at 0700z 93-SD/PJP2 was noted 4x2 report short path, both reported by Evan 43-EW-01.

Moldova surged through the noise at 0945z with 312-XX/DX a good 5x3 report; interference from Asia made the going quite difficult at times. QSL to PO Box 1844, Dnepro 49027, Ukraine Republic.

Mount Athos should have been active throughout May with 254-PG/0 doing the honours. For the lucky, QSL cards go to PO Box 80180, Piraeus 18510, Greece.

Scotland is always popular with DXers in Australia with a number of contributors reporting Ken 108-SD-020, John 108-SD-117, Keith 108-PS-038 and also 108-SD-136.

Slovak Republic station Chris 330-SD-137 was looking for the Pacific around 0902z but was not having much luck. Chris was a poor 4x1 at the time and just about the noise level.

The Ukraine Republic should be going hard at it with 315-RS/0 active until 1000 contacts are accumulated. QSL to PO Box 7045, Genova 16148, Italy.

Wales is currently about in an IOTA capacity as 163-WM/EU-124 on Holy Island. The station will close once the magic 1000 contacts are made. QSL to PO Box 1, Tabaccaro 91020, Sicily, Italy.

AFRICA & INDIAN OCEAN

The **Canary Islands** came through via the long path at 0145z with Derrick 43-

JERSEY 167-SD/EU-013

The weather on wind swept Jersey Island has always been a barrier for many DXpeditions and this was no exception for the operators of 167-SD/EU-013 back in March. Tim 26-SD-029, Jed 26-SD-212 and Ant 163-SD-080 departed by ferry on March 12th from Weymouth for the four-hour journey to Jersey in the Channel Islands. Due to the foot and mouth disease strict quarantine was enforced with the rental vehicle transporting the trio being disinfected prior to driving onto the ferry.

A rather rough crossing indicated the anticipated weather to be expected ahead, on arrival the vehicle had to be again disinfected at the ferry terminal. The foot and mouth epidemic again reared its head with no bacon or sausages available at any of the local stores, so the breakfast menu at the DXpedition camp would have to be revised! Hailstorms throughout the afternoon slowed down the erection of tents and antennae, taking them two and half-hours.

As this was a combined Alfa Tango and Sugar Delta operation on airtime was equally divided with the AT callsign going to air first. Conditions on the band were quite good with North America, the Caribbean plus Australia and New Zealand making the log plus the usual hordes from Europe. The lads closed down at 2300z and decided to get some sleep. They were abruptly awoken in the early morning by a severe thunderstorm with hail and torrential rain. Winds gusted between 80-100Kmh. Fortunately the camp held together with no reported damage and they were rewarded with a sunny day.

Two resident operators, John 167-AT-101 and Phil 167-AT-103 paid the team a visit during the day to see how they were progressing. The band was reasonably quite but the lads ran into some troubles with Americans who didn't appreciate DXpeditions and the pile-ups they attract. Some Americans deliberately tried to disrupt operations by chatting locally on the frequency. Another big rainstorm swept through later in the day flooding one of the tents, additional plastic sheeting was laid but to no avail!

On the eve of their departure the weather was still wet at 0600z but conditions on the radio were much better with the team working into all continents. By afternoon the rain had stopped and the winds abated and they enjoyed a quiet nights sleep. Packing up the station on March 16th they trudged through mud and sludge loading up the rental vehicle and were relieved to head back to the ferry terminal for another rough channel crossing to Weymouth.

Some 80 DXCC entities were worked in total, interesting contacts were Iraq, Senegal, Equatorial Guinea, Japan, Alaska and New Caledonia. A four element beam and an Antron-99 vertical plus two transceivers with one acting as a spare.

SD-108 working Guiseppe 34-AT-109 a good 5x5 report. Quite a number of 34 prefix stations were heard about at this time indicating a good path.

Cocos Keeling Island was doing brisk business with the ever-excitable Europeans at 1052z with 193-IR-101 proving very popular.

The **Comoros Islands** is a rare one that many still need, so you might like to look around for Cheik 185-SD-101 reported at 0655z 5x1 in QLD.

Congo has been reported as active with Rino 214-RS/0 about the traps, although his signal was very weak in Australia. QSL to PO Box 7045, Genova 16148, Italy.

Ethiopia came through quite well at 0530z with many in hot pursuit of Patrick 206/186-AT-105 a good 5x6. Patrick appeared to be focused on Europe at the time.

Madagascar powered through at 0502z with Anja 188-IR-032 peaking 10dB over the nine at times the other Sunday. However, all was short lived when the signal took a rapid dive at 0508z and disappeared into the noise. QSL to Lars 13-IR-102 in Germany.

Namibia has been about with Robbie 74-AT-011 a good 5x6 with Derrick 43-SD-108 at 0750z. Just up the band a couple of channels was Reg 74-DR-101 who was 5x8 at 0812z.

Reunion Island burst through the noise at 0700z with Cyril 173-SD-115 a good 5x7 into Sydney however it was very short lived as Cyril faded out quickly around 0704z.

Senegal will be about the traps sometime during July as 64-SD/0. The exact dates are not yet available, QSL to Jos 19-SD-082.

South Africa came through quite well just on the east coast sunset with the following being noted Bill 44-D-01, John 44-JP-22, Bill 44-WG-001, Jaques 44-ZL-406, Don 44-DB-101 and 44-AS-020. Signals were not very strong but they were all quite readable around 0700z.

Swaziland made the log of Evan 43-EW-01 at 0712z with Bill 191-CA-003 coming through a weak but readable 4x2 report. Better than nothing Evan says!

Uganda is scheduled to come on air sometime in July as 174-FAT/0, length of operation unknown. QSL to PO Box 63, Caudan-Cedex 56854, France.

Zaire or recently renamed the Democratic Republic of the Congo, has been quite active with Rino 162-RS/0 heard in the northern states. At 0634z the signal was 5x3 in northern QLD and WA. Rino made comment towards the end of his operation about the bad manners exhibited by many trying to work him.

ASIA/MIDDLE EAST

Afghanistan is supposed to be active as 234-TRC/DX until 1000 contacts is reached. However, nothing to date has been reported so maybe it has yet to make it on air? QSL to PO Box 49, Kazanlak 6100, Bulgaria.

Israel came through very well around 0800z with Lery 97-SD-101 a good 5x8. Also noted was Ben 97-BR-001 at 0846z 5x6 peaking nine.

Jordan was reported active as 111-FGB/0 during late May; many still need this semi rare country confirmed. QSL via Greg 15-FGB-105 in Switzerland.

Kuwait has been very active with Ali 102-AT-104 heard a good 5x6 around 0730z in Sydney the other weekend.

Mongolia proved to be popular with the European windbags, as I heard 95-TRC-102 battling an out of control pile up at 1003z. The frequency was in an utter shambles, stations calling over each other plus the deliberate interference that accompanies most semi rare DX operations.

Qatar came through quite well at 0702z with a number of people chasing 115-KPI-110. Although his signal was quiet weak here there were many from the Pacific in hot pursuit.

Thailand was a good 5x9 plus at 0730z with 153-RT-123 creating considerable interest on the band. Many Australian and Pacific stations were after a contact at the time. Also reasonably active is Emilio 153-AT-170 heard at 0559z 5x6.

Turkmenistan came through quite well at 1005z with Derrick 43-SD-108 securing 314-TRC/DX. The signal was a good clear 5x7 at the time. QSL to PO Box 49, Kazanlak 6100, Bulgaria.

LATIN AMERICA/ CARIBBEAN

Aruba in the Dutch West Indies created a little interest on the band with David 232-RA-765 a good 5x6 at 2255z.

The **Cayman Islands** has been quite active with both 125-AT-105 and 125-AT-027 noted about the band between 2145-0200z, mostly on the weekends their time.

Chile pushed the meter well into the red with Julio 32-CT-102 plus 10dB at 2239z. Later, at 2250z Derrick 43-SD-108 had Antonio 32-AT-133 5x3 plus Alex 32-WD-004 5x5 at 2345z.

The **Dominican Republic** came through a good 5x5 at 0235z with Derrick 43-SD-108 working Jose 37-KP-010. QSL route not given.

Ecuador has been about with Gustavo signing as 61-SD/DX, at 2200z he was a good 5x8 in Sydney.

French Guyana burst through the noise at 2230z with Francis 22-RC-001 calling for the Pacific, he was quickly snapped up by a few East Coast DXers.

Martinique in the French West Indies was plus 10dB at 2359z with Chris 136/14-SD-041 trying to drum up some business in the Pacific. Being a weekday in Australia there weren't too many responses to the call. Fransisco 136-SD-136 has also been busy into the Pacific, at 0112z he was 5x5 in Sydney.

Peru came through quite well at 2333z with Hernan UNIT-767 looking for small islands in the Pacific. Hernan peaked 5x8 at best with heavy fade evident on the band.

Saint Lucia attracted considerable attention from the Pacific with a good 5x9 plus signal from Neil 143-SD-010. Neil had a number of callers when I heard him the other weekend around 0114z.

Suriname was about the traps with Berto 73-SD-102 heard over a couple of weekends. The other Sunday Berto was 5x8 around 2330z working into eastern Australia and New Zealand.

Trinidad & Tobago in the West Indies suffered from rapid fade at 2203z when I noted 158-SD/SA-011 on the band. One minute the signal was 5x8 and the next a miserable 3x1 at best, at times the reception was actually better on the vertical rather than the beam. Also doing the rounds was John 158-PX-964 who was 5x9 at 2212z plus Julian 158-RT-101, Ken 158-SD-440 and Newton 158-KP-440.

FUTURE ACTIVITY...

Aland Island 212-SD/DX soon, **Angola** 39-RS/0 soon, **Benin** 183/14-RSI-015 09-31 Aug, **Bermuda** 123/35-AT-130 Mar to Nov inclusive, **Estonia** 304-SD/0 01-31 Aug, **Federated States of Micronesia** 230-FAT/0 01-31 Aug, **Iceland** 27-SD/DX 01-31 July, **Rodi Dodecanese** 59-AT/EU-001 Kos Island 12-26 Sep, **Rotuma** 325-TD/DX soon, 325-WD/DX soon, **Scotland** (Shetland Islands IOTA) 108-SD/SH-EU-012 28 Jul to 07 Aug, **Senegal** 64-SD/0 late July, **Singapore** 98-SD/0 05-20 Dec, **Sri Lanka** 177-SD/0 30 Jul to 18 Aug, **St Kitts & Nevis** 283-DT/0 soon, **South Cook Is** 250-SD/0 13-27 Nov, **Tunisia** 147-AT/AF-083 **Djerba Island** 06-23 Aug, **Ukraine** 315-WD/DX soon, **Western Sahara** 300-IR/0 soon.

EPILOGUE

Thanks go to the following contributors for sharing their news with us: Colin in QLD, Bryan 43-DT-005, Gil 43-GG-01, Derrick 43-SD-108, Mick 43-AT-001, Allen 43-AR-09, Peter 43-FP-103, Andrew 43-AW-010 and Evan 43-EW-01. Reports can be sent via email to **27dx@usa.net** or by post to PO Box 299, Ryde NSW 1680. Catch you all next month, ***73 de Jack***.

L.B. Cebik, W4RNL, asks the question ...

SUPPOSE I COULD ONLY HAVE ONE ANTENNA ...

Suppose I wanted to work 40 through 10 metres. And further suppose that I want to know where my signal is going. Now what would I choose?

What would I choose? Let me be a bit more specific. Suppose I wanted to work 40 through 10 metres. And further suppose that I want to know where my signal is going.

Now what would I choose

THE 40-METRE DIPOLE STARTING POINT

The most common answer to the problem I just posed is a 40-meter #12/#14 copper wire dipole, fed with parallel transmission line for use as a multi-band doublet.

Fig. 1 (see below) tells the simple construction tale. Placed high enough in the air, the 67' (20.41m) doublet performs very well. Its bi-directional pattern on 40 has good side QRM rejection, and with enough altitude, the elevation angle makes DX a real potential with every band opening.

Let's place the antenna at a height of 66' (20.11m) up and see what the models tell us that we can expect by way of performance.

The TO angle is the elevation angle of maximum radiation. I have also provided information on the vertical and horizontal beamwidths (measured to the -3 dB points from the maximum strength bearing). We often neglect this information, but the data tell us some important facts.

The vertical beam width is a rough measure of the range of elevation angles that we can count on for good communications. The horizontal beamwidth tells us how broad or narrow our signal is and hence how careful we must be in aiming the antenna—either when we build it or when we rotate it. (One of the amusing facets of reading lots of e-mail is discovering how many beam users demand one-degree aiming accuracy when their beamwidths are well over 50 degrees.)

Freq. MHz	Max. Gain dBi	TO Deg	VBW Deg	HBW Deg	Feedpoint Z R +/- jX Ohms
7.15	7.3	28	35	86	70 - j 10
10.1	8.1	20	23	70	275 + j 800
14.15	9.0	15	16	51	4670 - j 345
18.1	10.5	11	12	33	175 - j 860
21.2	8.4	10	10	33	100 - j 115
24.95	9.3	8	9	33	375 + j 730
28.5	9.5	7	8	28	3265 + j 375

Table 1.

The 67' (20.41m) doublet shows the anticipated lowering of the TO angle as we increase frequency. As we increase the frequency, the antenna is increasing in electrical height, that is, its height as a fraction of a wavelength. So we expect the beam angle to be lower on the upper bands.

The beam widths—both vertical and horizontal—narrow with rising frequency. Still, the vertical beamwidth is wide enough on all bands to catch the main stream of long-range skip. And the horizontal beamwidth is sufficiently broad to make aiming non-critical (but not unimportant).

The range of impedances at the antenna suggests that with a parallel transmission line and an ATU, we should be able to effect a match on all bands. 20 and 10 metres might present slight problems, but changing the line length will likely solve them by presenting the ATU with impedance values it can handle. However, the gain column presents us with a small problem. The maximum gain of the 67' (20.41m) doublet occurs on 17-metres, takes a large dip above that band, and then slowly rises once more.

For a simple wire, the actual gain numbers are not the problem. The question we want to ask is this: why does the dip occur?

Fig. 2 (below) can help us figure out what has occurred. The azimuth patterns overlaid on the plot are for 40, 15, and 10 metres. The 40-metre pattern is the typical oval. As we increase frequency, the oval grows narrower (decreasing horizontal beamwidth) while the gain increases—up to 17 metres. On this band, the 67'

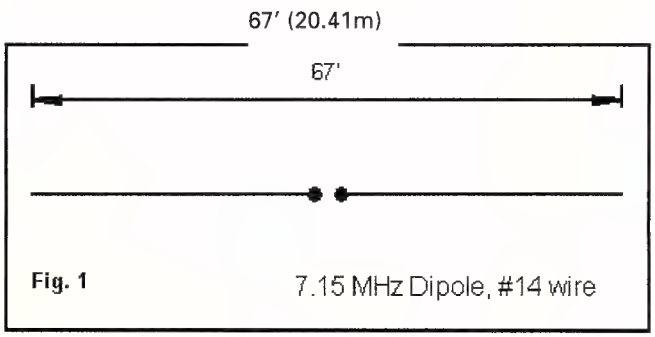


Fig. 1

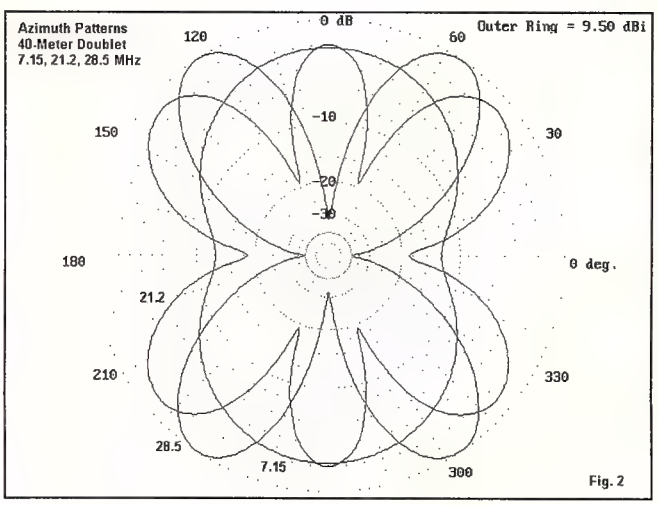


Fig. 2

(20.41m) doublet is about 1.25 wavelengths long: an extended double Zepp (EDZ).

We expect about 3 dB gain over a dipole from an EDZ, and if we compare the 40-metre and 17-metre gain figures, we can see that we get it. Above 17 metres, the antenna is longer than 1.25 wavelengths. At 15 metres, the antenna is about 1.5 wavelengths long. The main lobe is no longer broadside to the antenna, but, as shown in ***Fig. 2***, it is broken into six distinct lobes. The lobes broadside to the wire are no longer the strongest. As we move into the 10-metre region, where the antenna is two wavelengths long, we have a pattern composed of four lobes at roughly 40-degree angles to the wire. For those unfamiliar with pattern development as an antenna becomes multiple wavelengths long, the following rules of thumb apply.

For an antenna that is N wavelengths long, where N is an integer (like, 1, 2, 3), the number of lobes is twice the value of N. So a two wavelengths antenna has four lobes, and a one wavelength antenna has only two. For antenna lengths that are N.5 (like 1.5, 2.5, etc.), the number of lobes will be the sum of the number of lobes we get at N and at N+1. At 15 metres, where the antenna is 1.5 wavelengths long, one wavelength gives us two lobes and two wavelengths gives us four lobes, for a total of six. The higher number at N.5 wavelength values arises because the new lobes are growing and the old ones shrinking—and they are nearly equal strength at the N.5 wavelength points.

Freq. MHz	Max. Gain dBi	TO Deg	VBW Deg	HBW Deg	Feedpoint Z R +/- jX Ohms
7.15	7.0	29	35	94	25 - j 580
10.1	7.6	20	23	83	55 - j 100
14.15	7.7	15	16	72	195 + j 485
18.1	8.6	12	12	60	920 + j1565
21.2	9.0	10	10	51	4160 + j 155
24.95	10.4	8	9	40	520 - j1545
28.5	10.4	7	8	31	140 - j 650

Table 2

THE 44' (13.41m) WIRE SOLUTION

The problem with wire lengths over 1.25 wavelengths is that we are no longer sure that we have a good signal broadside to our antenna. Suppose I put up a wire in Tennessee, running it NW to SE. That makes it broadside to Europe in one direction and to VK/ZL-land in the other. Not a bad set up. However, the main lobes for frequencies from 21 MHz up are no longer going where I want them to go. (Where they go may result in interesting contacts, but we set up our problem at the beginning so that it includes the need to keep our signals where we want them.) There is a simple solution to this problem, but it may not be the one some folks would expect.

Conventional wisdom tells us always to make antennas bigger and longer. However, the solution to our problem is to make our doublet shorter. Let's try a doublet that is 44' (13.41m) long, as in ***Fig. 3***.

Again, #14 or #12 AWG copper wire will do just fine for the antenna. The first question we may now ask is whether we lose anything with the shorter wire. Let's find part of the answer in another table, modelled with the copper wire (#14 AWG) antenna 66' (20.11m) above average ground.

The gain figures begin about a quarter dB below the figures for the 67' (20.41m) doublet on 40 metres and climb steadily. The elevation angles of maximum radiation and the vertical beamwidths are virtually identical to those for the longer doublet. The shorter antenna provides a broader horizontal beamwidth on every band, which makes aiming less critical. The pattern of impedances offered at the feedpoint differs in detail from that of the longer doublet, but the values are manageable.

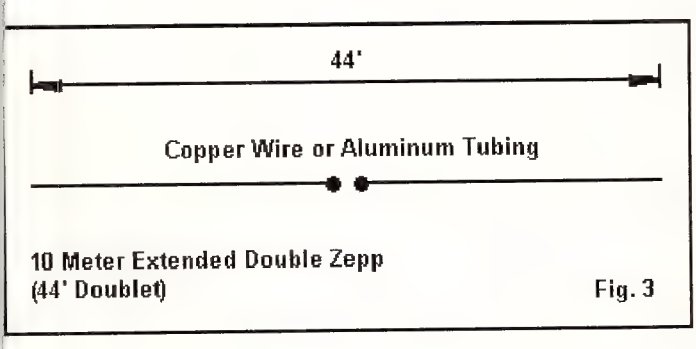
To see one of the major advantages of our short doublet, we should look at ***Fig. 4*** (below).

The composite azimuth patterns for the doublet on all of the bands for which it is intended have their major lobes exactly broadside to the wire. The 44' (13.41m) length was no accident. On 10 metres, this length is about 1.25 wavelengths long, the standard EDZ length.

We are extremely pleased to welcome Mr Cebik (or "LB" as he is generally known) to the pages of R&C for the first, but hopefully not last time. LB is an ex-professor at the University of Tennessee, Knoxville who retired to devote full-time to both antenna studies and placing his work on his website, http://www.cebik.com "to share them with the community of those interested in antennas and related subjects".

He has been published in almost all of the US amateur radio journals with various articles and items from his web site being translated into a variety of languages, including Spanish, German, French, Russian, etc - (and now Australian).

He has also done considerable writing and other work for the ARRL, which he serves as both a Technical and Educational Advisor.Our thanks to LB for this thought-provoking article.



10 Meter Extended Double Zepp (44' Doublet) Fig. 3

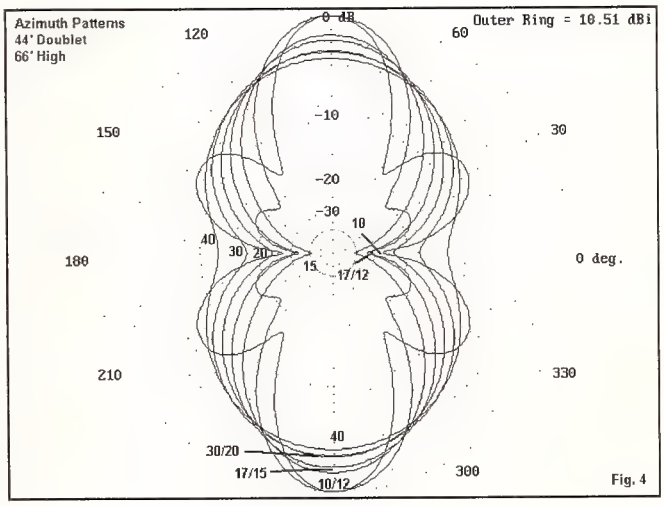


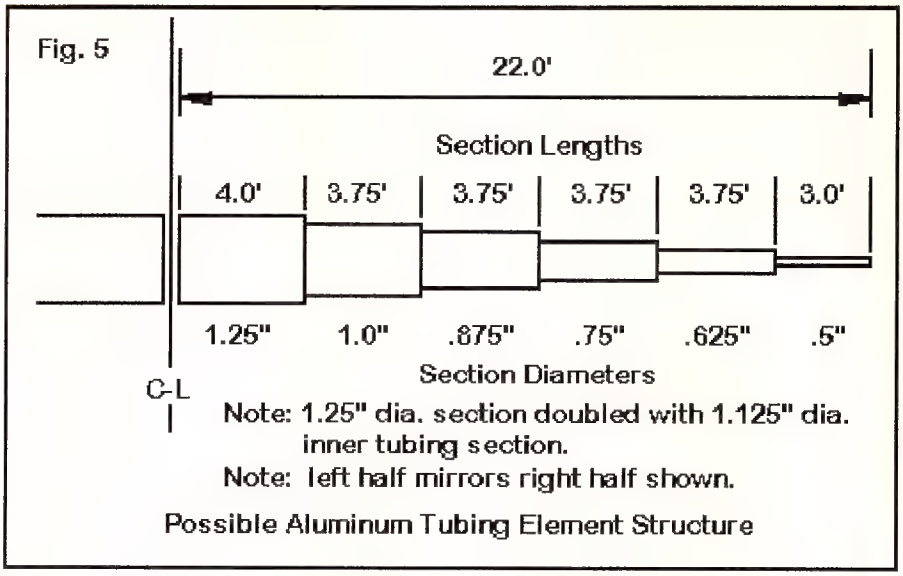
Fig. 4

The 10-metre pattern shows the anticipated strong main lobes plus the emerging "ears," secondary lobes that will become the major lobes at higher frequencies.

On 15 metres, the antenna is about one wavelength long, and on 30 metres it is just under the right length for a half wavelength dipole (which is indicated by the low resistive impedance and the capacitive reactance for 10.1 MHz).

On 40 metres, the antenna is between 1/3 and 3/8 wavelengths long, about the minimum length we should use. Anything shorter would show very low resistance values and very high reactance values—a difficult situation for any ATU to handle. If I wanted to aim at both Europe and at Australia and New Zealand on all bands from 40 through 10 metres, then the 44' (13.41m) doublet is the superior antenna to the longer 67' (20.41m) doublet.

Of course, larger (102' (31.08m) or 135' (41.14m)) all-band doublets break into fragmented lobe patterns at lower frequencies than the 40-metre dipole with which we started. So, if we make aiming one of the criteria for our antenna, the 44' (13.41m) doublet may be the way to go.



---------- WIRES ----------

Wire	Conn.	End 1 (x,y,z : ft)			Conn.	End 2 (x,y,z : ft)			Dia(in)	Segs
1		-22.000,	0.000,	66.000	W2E1	-19.000,	0.000,	66.000	5.00E-01	3
2	W1E2	-19.000,	0.000,	66.000	W3E1	-15.250,	0.000,	66.000	6.25E-01	4
3	W2E2	-15.250,	0.000,	66.000	W4E1	-11.500,	0.000,	66.000	7.50E-01	4
4	W3E2	-11.500,	0.000,	66.000	W5E1	-7.750,	0.000,	66.000	8.75E-01	4
5	W4E2	-7.750,	0.000,	66.000	W6E1	-4.000,	0.000,	66.000	1.00E+00	4
6	W5E2	-4.000,	0.000,	66.000	W7E1	4.000,	0.000,	66.000	1.25E+00	9
7	W6E2	4.000,	0.000,	66.000	W8E1	7.750,	0.000,	66.000	1.00E+00	4
8	W7E2	7.750,	0.000,	66.000	W9E1	11.500,	0.000,	66.000	8.75E-01	4
9	W8E2	11.500,	0.000,	66.000	W10E1	15.250,	0.000,	66.000	7.50E-01	4
10	W9E2	15.250,	0.000,	66.000	W11E1	19.000,	0.000,	66.000	6.25E-01	4
11	W10E2	19.000,	0.000,	66.000		22.000,	0.000,	66.000	5.00E-01	3

TWO SIDE NOTES.

First, if we want to cover the bands only up through 20 metres, but want to include 80 and 75 metres within the frequencies for which we are well-aimed, then an 88' (26.82m) doublet would meet our needs. Of course, there is nothing magic in the precise length numbers chosen, since a length change of a foot or two will change almost nothing in terms of performance.

The bands with the highest reactances at the feedpoint might show the greatest change in value as we alter the antenna length, but the feedpoint values on the other bands would hardly change enough for an ATU to notice. Second, height is a major consideration with this sort of antenna. Perhaps 20m or thereabouts is not feasible for everyone. However, every 30.5cm of (safe) height that you can add to the antenna, the better it will work.

This principle goes back to the days of George Grammer of ARRL, who preferred to add height rather than elements to his antennas. The idea is no less true today, although there are some limits. Once we get above one wavelength, there may be some holes in our DX elevation-angle coverage at certain antenna heights. However, in Grammer's day, only on 10 metres and VHF did most hams think about heights above one wavelength or so.

THE ALUMINIUM ALTERNATIVE

There is no good reason why a single element antenna must be constructed from thin wire—excepting cost and ease of construction. If there is only one support that is high enough, then we might well consider constructing an aluminium tubing version of the 44' (13.41m) doublet.

Fig. 5 shows one of many possible schemes for constructing the element. In tabular form, the element structure looks like the following partial antenna model description.

The construction shown in the figure should be designated light to medium for the element length involved. It is based upon purchasing 8' (2.43m) lengths of aluminium and cutting them in half. Prices for 6061-T6 aluminium tubing are quite reasonable. The tapering scheme allows for about 7.62cm of tubing overlap at every junction. Any less overlap would jeopardise physical strength, while too much more overlap will unnecessarily

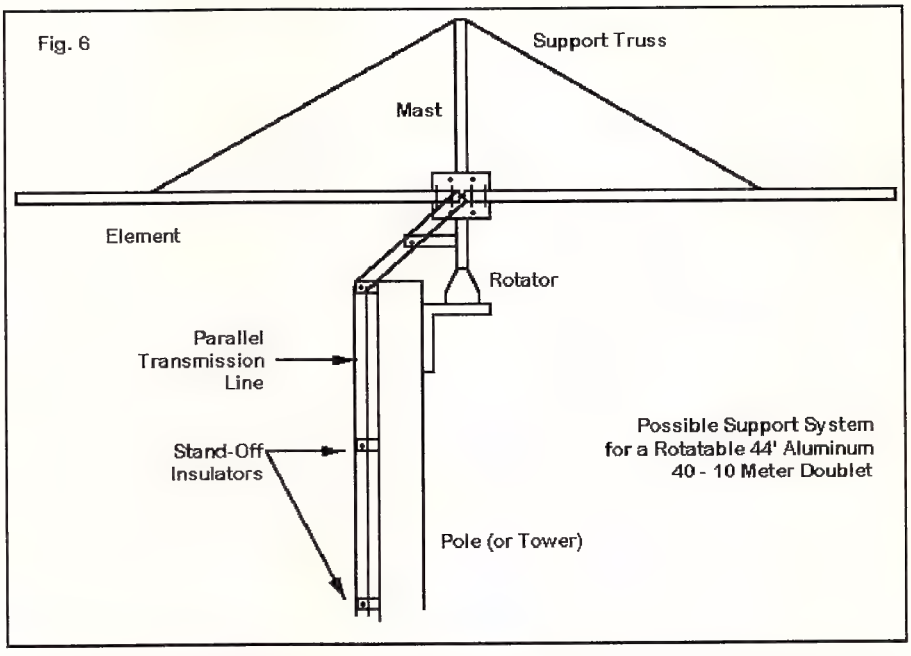
Frequency MHz	#14 Copper Wire Efficiency (%)	Stepped-Dia. Aluminum Efficiency (%)
7.15	96.98	99.70
28.50	98.35	99.77

Table 4

increase the element weight. The double section of 1.25" and 1.125" diameter tubing at the centre provides reinforcement for most mounting schemes. Some builders prefer to alternate longer and shorter sections of tubing for greater overall strength. Whatever scheme one uses, analysing it through a program such as YagiStress by Kurt Andress can go a long way toward ensuring a mechanically sound antenna. Nonetheless, the 44' (13.41m) doublet is only about 9' (2.74m) longer than most 20-metre Yagi reflectors and a good bit shorter than the elements used for 30-metre and 40-metre Yagis.

Hence, the use of an aluminium tubing element is certainly feasible. The use of aluminium tubing provides a small but determinate increase in electrical performance for the doublet. As we increase the diameter of an element, the RF resistance decreases considerably.

Although copper wire is certainly efficient enough for most purposes, the tubing version of the antenna shows an increase in efficiency, despite the fact that the tubing version user aluminium, which has a higher resistivity than copper.



Freq. MHz	Max. Gain dBi	TO Deg	VBW Deg	HBW Deg	Feedpoint Z R +/- jX Ohms
7.15	7.2	29	35	94	20 - j 410
10.1	7.7	20	23	83	50 - j 85
14.15	7.8	15	16	72	195 + j 295
18.1	8.7	12	12	60	1005 + j 845
21.2	9.1	10	10	51	1700 - j 705
24.95	10.5	8	9	40	285 - j 795
28.5	10.5	7	8	31	100 - j 375

Table 5

Refer table 4 (opposite page).

Notice that the differential in efficiency grows less as the frequency increases, that is, as the wire diameter becomes a greater fraction of a wavelength. Nonetheless, the tubing version shows systematically higher gain values for each band than the wire version of the 44' (13.41m) doublet.

Compare ***table 5*** with the copper wire table on the previous page.

The gain differences are certainly not large enough to make any kind of operational difference in using the 44' (13.41m) doublet. At most, they help us better understand some of the variables involved in antenna structures. Notice also that the feedpoint impedance figures vary from the wire values more radically as the frequency increases—and also where the resistance or reactance values are high to begin with. The values shown—which will vary considerably as one changes the precise length of the finished antenna—are nonetheless quite manageable by most ATUs. Supporting an aluminium doublet of the size we are suggesting is a considerable project.

Fig. 6 shows the main aspects of the things we should consider.

1. We shall need a support tower or pole as tall as we can safely make it. Although I know some inveterate climbers much older than I am who regularly scale high towers, my own experience tends to decrease my tower height by one section for every decade older I get. Safety comes first; antenna height second.

2. As I doodled the sketch in ***Fig. 6***, I added a rotator for the fun of the prospect. We only need about 180-degrees rotation for this doublet, so a side mounting on an existing tower would likely be good enough.

3. For elements 40' (12.92m) and longer, consider adding a top-mounted truss to help support the element. A truss system will require a longer mast than trussless elements. The exact position on the element to place the ends of the truss depends a great deal on the precise element diameter schedule chosen. Use a weather and UV resistant material for the truss rope.

4. Since the antenna will use parallel transmission line, stand-off insulators will be necessary. If the antenna is to rotate, the position of the line from the feedpoint to the stationary supports on the pole will require considerable planning. The line should avoid close proximity to any metal in the mounting region.

5. The parallel transmission line is low loss inherently when the runs follow standard handbook recommendations. However, for lowest losses, consider true open-wire line rather than vinyl-coated lines. Even lines with "windowed" openings in the vinyl between the wires tend to show higher losses when wet than when dry.

Like all antennas, preventive maintenance at least once per year (every six months is better) will go a long way toward preventing unexpected catastrophic failures.

However, you decide to construct a single-element antenna, the 44' (13.41m) doublet has some interesting properties that provide advantages over other types of multi-band doublets.

It is an antenna worth considering—if you can have only one wire.

SUGGESTION

Having read the article, we would like to suggest that you visit LB's web site and check out some of his books and CDs. There is more antenna material there than you can wave a large stick at - and it comes from a highly qualified amateur.

Again, R&C's thanks to LB.

If you'd rather be fishing you should check out the

IC-M502 VHF Marine Radio

reviewed by **Neil Duncan**, VK3ND

Users of marine-radio facilities know all too well what requirements are demanded of their radio gear. It is not only that radios for such service should be waterproof, but also they should be ultra-reliable under extreme conditions, because quite simply, lives may be at stake if they are not. It was with great interest, therefore, that we had a look at the very latest in the Icom marine line, the IC-M502.

This smallish set is clearly designed to be mounted on the cabin console of your boat or maybe even on the dashboard of a pleasure or fishing boat. It is a VHF set covering the marine and weather channels

in the 156 MHz region and runs FM in a channelised mode. Needless to say, the care Icom has taken to waterproof the unit is absolutely awesome. Although I didn't try it, the IC-M502 is rated to withstand a submersion depth of one metre for 30 minutes.

The review unit I received from Icom Australia contained three items. Obviously, the radio, which is small and light, has a permanently connected microphone attached to the front panel; the optional HM-127B/W remote control microphone (the B and W stand for black and white) and a six-metre extension cable supplied with the microphone. So why would you want the optional microphone? Simple - with it in circuit, all available functions of the IC-M502 (except for the emergency channels operation) can be controlled from a remote location, such as from the deck or flybridge or inside the craft. Add to this the fact that the extra microphone doubles as an intercom and you can see why so many people order both items. After unpacking all of these bits and pieces, I connected the power supply cables, the antenna (I used my VHF discone) to the PL-259 and switched on the unit.

The generous front panel is decked out with large function switches and an easy-to-read LCD display, all of which are backlight with a muted amber colour. It is all clear and well laid out, the dot matrix character information is easily read and the channel number can be read from some distance away.

The main tuning knob is a detent type (it goes chunk, chunk as you turn it) and the volume and squelch knobs look strong enough to take a lot of punishment, The buttons are also generously large and like the main tuning knob, beep when used (this can be turned off as I found out much later).

The microphone and its connector are suitably waterproofed. As they could be exposed to the elements this is good engineering. The microphone also 'talks' (it acts as a speaker). Given the short curly cord, I am not sure why Icom have included this feature - maybe you stick it against your ear to listen in case of a noisy 'perfect storm'...

The standard against which waterproofing is measured is called the Japan Industrial Standard (JIS) for water resistance. It uses a 0 to 8 scale to define the level of water ingress protection. JIS '0' means there is no special protection, JIS '1' means that vertically dripping water has no harmful effect JIS '6' means that direct jetting water from any direction cannot enter the radio and JIS '8' means that the equipment is useable for continuous submersion in water. This radio carries a JIS '7' label which means that water will not enter the radio when it is immersed in water under defined conditions (making it 'immersion resistant').

I tested this unit 20 km from the sea, but had line of sight. By switching the IC-M502 into 'international` mode (the beautifully clear manual tells you how to do this) and scanning through the channels, I heard lots of craft and 'official sources'. The sensitivity of the IC-M502 is excellent and easily outperformed my general coverage VHF/UHF amateur radio set on the marine frequencies.

The transmitted signal (I used a dummy load and wattmeter) is spot on with respect to output power and accuracy. You have a choice of 25 watts or one watt but some channels, I noted, are locked into low power mode. The LCD display tells you the name of most channels (such as ship to shore) and places you in no doubt about what you are hearing. The audio quality is quite good, a surprise since a waterproofed microphone is usually a muffled microphone.

The push buttons on the front panel allow you to

- Choose power level
- Select local or distance receiver sensitivity
- Bring an optional voice scrambler into circuit (check the laws on this one)
- Activate (or configure) the call channel
- Activate the 'dual or tri-watch' system so that multiple channels can be mon-

itored in sequence (weather plus regular channels, for example.)
- Channel scanning
- Activate the position menu. That is, allowing you to manually type in your latitude and longitude.
- Distress switch.

That last one is a beauty. You lift the little red flap and press the button for five seconds. This activates the emergency channel (channel 70) and the IC-M502 sends your location and identity every four minutes or so. Once an acknowledgment is received on a suitable channel, this feature is switched off (or alternatively, when 23.5 hours elapsed or when the power 'is turned off').

You can connect a suitable GPS receiver to the rear panel flying lead so that position and time data can be supplied to the IC-M502 automatically. If you do not want to obtain such a unit (and Icom can advise of suitable suppliers if you do) then manual entry of the latest data is easy enough.

The rear panel also has flying leads for DC supply and for an external loudspeaker.

Other features of the IC-M502 include a selection of USA, Canadian or international channel identities; duplex channel capability; selective channel scanning; battery voltage warnings; microphone lockout; channel naming; channel 70 'all ships' call; selective calling ID address configuration; simple message reception; NOAA weather alert (if you are 'over there') beep; intercom and panel light brilliance adjustments. So there is plenty to play with if the fish are not biting...

The construction of the IC-M502 is excellent. The radio is encased in a diecast box with a water-seal arrangement as you drop the front panel in. The rear panel doubles as a heatsink, which becomes only mildly warm even with an extended transmit period. The small size and simplified mounting arrangements will, I imagine, be most welcomed.

SUMMARY

Icom has recognised and fully addressed all the important issues in a marine radio with this latest little box, the IC-M502.

It is a fine looking radio but has a ruggedness and reliability factor that is to be greatly admired.

Those wanting to make their lives over the ocean waves a little more secure might well have a close look at it.

SPECIFICATIONS

- **Size** 59.9w x 121.4h x 30.0d mm
- **Weight** (approx): 160g
- **Available** in black or white
- **Built-in** LCD display
- **Optional** fully integrated COMMANDMIC
- **Submersible** JIS-7 construction (minus connection cables)
- **Built-in** Digital Selective Calling (DSC)
- **All International**, USA and Canadian channels, plus weather channels with alert function available. (USA version only)
- **Keypad** and display backlighting with eight adjustable levels Supplied "Smart-Speaker-Mic" for clear reception and transmission
- **Convenient** one-touch "TAG" scanning selection with simple add/delete
- **Instant** access to Ch 16 and Ch 9 (or Call channel)
- **Optional** UT-98 or UT-112 voice scramblers for communications privacy
- **Up to 22** free channels are available (ask your dealer for details)
- **Frequency range**
  Tx: 156.025 - 157.425 MHz
  Rx: 156.050 - 163.275 MHz
- **Mode**
  16K0G3E (FM)
  16K0G2B (DSC)
- **Power** supply requirement: 13.8 V DC ±15%
- **Current** drain (at 13.8 V DC):
- **Transmit** 6 A (at 25W output)
- **Receive** 1.2A (at max. audio)
- **Operating temp**. range: -20∞C to +60∞C; -4∞F to +140∞F
- **Frequency stability** ±10 ppm (-20∞C to +60∞C)
- **Antenna connector** SO-239 (50 ohm)

TRANSMITTER

- **Output power** 25W or 1W (at 13.8 V DC)
- **Modulation system** Variable reactance freq. modulation
- **Max. frequency** deviation: ±5.0 KHz
- **Spurious emissions** -70 dB
- **Residual modulation** More than 40 dB
- **Adjacent channel power** 70 dB

RECEIVER

- **Receive system** Double conversion super-heterodyne
- **Intermediate frequencies**
  1st 21.7 MHz
  2nd 450 kHz
- **Sensitivity** less than 0.25 µV (at 12 dB SINAD)
- **Squelch sensitivity** Less than 0.3 µV
- **Adjacent channel selectivity** More than 80 dB
- **Spurious response** More than 80 dB
- **Intermodulation response ratio** More than 80 dB
- **Audio output power** More than 3.5 W (at 10 percent distortion with a 4 ohm load)

SUPPLIED ACCESSORIES

- Hand microphone
- Spare fuses
- DC power cable
- Mounting bracket kit
- Owner's manual

OPTIONS

- **MB-75 FLUSH MOUNT KIT** For flush mounting the IC-M502 to a flat surface such as a control panel.
- **UT-112 VOICE SCRAMBLER UNIT** Enables private communications by scrambling your voice signal.
- **OPC-999 EXTENSION CABLE FOR HM-127** 6m (20ft) of extension cable for the HM-127. Same as supplied with the HM-127.
- **COMMANDMIC** (HM-127) remote-control microphone

John Batty, VK4MBK, reports on his

SHORTWAVE LISTENING WITH A DIFFERENCE

Looking for some on-air action? – here's where to find the really interesting ones ...

John Batty *caradoc@caradoc.com* **or** *PO Box 703, Nanango, Queensland 4615* **spent years in the Air Force. In retirement, he now spends his time searching out unscheduled broadcasts and this time around he brings you some "inside" listening on the recent "Tandem Thrust" operation.**

This month, as usual my thanks go to everyone who sent in their logs, but an extra vote of thanks must go to Ian Julian ZL1TBM in Pukekohe NZ.

Through the vagaries of VHF propagation, Ian has had a front-row radio seat at Tandem Thrust 2001, with almost daily low-band VHF comms making the trip from Shoalwater Bay, Queensland, across the Tasman to his listening post. Ian has spent a lot of time relaying his loggings to me so that the rest of us can partake of some of the action.

By comparison, while I'm only 500km away from where it's taking place (Shoalwater Bay Training Area or SWBTA), I haven't heard a dicky-bird.

Ian's first loggings began arriving on April 9, during the build-up on and around Townshend Island. While there has been a bit of encrypted comms, a surprising amount has been "in the red". The transcripts illustrate very well the uncomfortable and sometimes hostile conditions of the area, with bogged vehicles, unreliable communications due to rough and mountainous terrain while communications nets are organised. While the TV news made much of the shooting of an emu, I didn't see it mentioned that some of the less-endearing Aussie critters scored the first blow, with an unfortunate Eastern Brown snake biting a US serviceman before the exercise even properly started. I've split the loggings from their daily format to the usual "by frequency" format, and all loggings are from Exercise Tandem Thrust 2001.

31.100MHz: 2305z Aust Army DDPRAC (Deputy Director of Practice) Primary Townshend Island SWBTA, with brief voice burst. "DDPRAC TOWNSHEND ISLAND nothing heard out." (IJ)

31.200MHz: 2132z Aust Army, with continuous KY57 encryption bursts. (IJ)

32.050MHz: 2256z callsigns DIAMOND, ALPHA 11, 21 BRAVO, CAVALIER 488 and WARTHOG: Aust Army Helo/AC Field Freq with "This is DIAMOND (Landing pad) go ahead ... ALPHA ONE ONE departed ... for Solvent ... for Solvent ... Roger, for Solvent.

WARTHOG, WARTHOG this is DIAMOND ... DIAMOND, DIAMOND this is WARTHOG, cleared to go Solvent in one zero minutes over ... Wilco WARTHOG ... ALPHA ONE ONE, roger copied Alpha Niner ... Bravo to Foxtrot to ... Solvent ... CAVALIER FOUR EIGHT EIGHT, copy, go Solvent ... WARTHOG, WARTHOG this is DIAMOND ... WARTHOG this is DIAMOND, did you copy the Bravo Two ... WARTHOG, unreadable say again ... Bravo Two, Foxtrot Three ... Solvent ... WARTHOG, roger ... We're currently airborne, two o'clock, one mile ... DIAMOND, TWO ONE BRAVO ... CAVALIER FOUR EIGHTY EIGHT, roger, going airborne ... TWO ONE BRAVO report ... TWO ONE BRAVO copied ... Roger Bravo to Foxtrot, two by two, from the Pan to Solvent ... Report Airborne Bravo One ... Confirm landing Solvent ... TWO ONE BRAVO affirm ... TWO ONE BRAVO, g'day." (IJ)

32.150MHz: 2215z on a duplexed net with "Picking up a 40mm grenade launcher ... GRENADE RANGE this is ZERO ALPHA, radio check over ... ZERO ALPHA loud and clear ... C/S STAFF PRICE at ammunition point, to pickup 40mm grenade launcher over ... ONE TWO, this is ZERO ALPHA over ... RANGE SENTRY this is ZERO ALPHA ... ZERO ALPHA, RANGE SENTRY has been attempting to contact you but has not been successful over ... ZERO ALPHA out." (IJ)

32.225MHz: 0440z COOKHOUSE and WANDERER: Aust Army or RAAF Ground Net with "We have no secure means on this net over ... We will contact you via other means over ... COOKHOUSE out ... COOKHOUSE this is WANDERER ... DIAMOND this is WANDERER ... WANDERER radio check over." (IJ)

32.375MHz: 0505z callsigns TANGO 1 ALPHA and 20: Aust Army or RAAF AFDS (Air Field Defence Squadron) Net, with continuous KY57 encryption bursts followed by some brief comms in the clear. "I'll get back to you once ... I'll get back to you in a second ... Once we get further information, out." (IJ)

TANGO ONE ALPHA, TANGO ONE ALPHA this is TWO ZERO, do you not have the means to squawk green over ... TANGO ONE ALPHA, at this stage I've new fields from your C/S, I'm able to talk to your C/S in UNIFORM on their field if you have them over ... Roger, I'm currently co-located with them, meet them on their means in green to discuss this plan further, out." Followed by continuous KY57 encryption bursts. (IJ)

32.800MHz: 2202z callsign RINGMASTER: US Mil unit with brief voice burst. "COOKHOUSE, COOKHOUSE this is RINGMASTER ... COOKHOUSE (Aust mil unit heard on 32.225 yesterday) this is RINGMASTER ... Nothing heard out." (IJ)

32.975MHz: 2142z Aust Army or possibly RAAF AFDS Net, with continuous KY57 encryption bursts. (IJ)

33.200MHz: 2128z Aust Army, with "ONE TWO BRAVO, ONE TWO BRAVO this is PAPA ZERO, PAPA ZERO over ... ONE TWO BRAVO, ONE TWO BRAVO this is PAPA ZERO over." (IJ)

0030z with continuous KY57 encryption bursts for nearly 4 hrs. (IJ).

33.300MHz: 2220z callsigns ZERO, ZERO 2, ZERO 3, ZERO 7, ZERO 9 and ZERO ALPHA: Aust Army with "You're broken, I understand you to say you have map decay? and continuing with tasks, is that correct over ... ZERO TWO that's correct we have map decay? and located ... Are we going to get therefore ... at this stage today over ... ZERO SEVEN this is ZERO ALPHA has there been a make ... submitted over ... ZERO ALPHA this is ZERO SEVEN a reference number to make ... is zero one zero five correction zero five zero one over ... ZERO ALPHA roger wait out.

ZERO ALPHA send over ... ONE ZERO, Loc Stat Serial Alpha, five three five zero seven five. Serial Bravo, halted over ... ZERO ALPHA confirm grid reads five three five zero seven five over ... ONE ZERO affirmative over ... ZERO ALPHA roger over.

ZERO ALPHA this is ZERO THREE over ... ONE ZERO over ... ZERO ALPHA, ONE ZERO send over ... ZERO ALPHA this is ZERO THREE, checking progress of vehicle over ... ZERO ALPHA this is ZERO THREE say again over ... batteries, figures 2. Serial Bravo, ASAP. Serial Charlie, one zero one one zero zero kilo, more to follow over ... ZERO ALPHA send over ... ONE ZERO ... Serial Delta, vehicle. Serial Echo, five three six zero seven two over ... This is ZERO ALPHA ... ZERO ALPHA this is ZERO THREE say again over ... ZERO ALPHA five three six zero seven two over.

ZERO ALPHA over ... ZERO ALPHA this is ZERO NINE, Loc Stat over ... ONE ZERO over ... ZERO ALPHA this is ZERO THREE radio check over ... Send over.

ZERO ALPHA this is ZERO NINE, Alpha, Stop; Grid five zero six one zero three. Bravo, Stop; Leaving. Charlie, Stop; South over ... ZERO ALPHA confirm grid reads five zero six one zero three over ... ZERO ALPHA this is ZERO NINE roger over ... ZERO ALPHA roger out.

Any C/S this is DELTA ZERO ZERO TWO radio check over ... DELTA ZERO ZERO TWO this is ZERO ALPHA loud and clear over ... DELTA ZERO ZERO TWO roger out to you.

ZERO ALPHA this is ZERO THREE radio check over ... Unknown C/S this is ZERO ALPHA say again over ... ZERO ALPHA, this is

ZERO THREE, radio check over ... ZERO THREE, ZERO ALPHA roger ... ZERO ALPHA, this is ZERO THREE, please report progress of vehicle over ... ZERO THREE this is ZERO ALPHA say again your request over ... ZERO ALPHA, this is ZERO THREE please report progress of support vehicle over ... ZERO THREE this is ZERO ALPHA, as previously stated, STARLIGHT (Medical element) vehicle is currently being used in another part of the AO (Area of Operations), more to follow over ... ZERO THREE this is ZERO ALPHA, you're to continue to transport that casualty by your own means over ... ZERO ALPHA this is ZERO THREE, if need be going in ... over ... ZERO THREE, ZERO ALPHA; understanding that, we're trying to jack up ... STARLIGHT as we speak over ... ZERO ALPHA this is ZERO THREE ... out.

ZERO ALPHA ... ZERO ALPHA unknown C/S you're weak over ... ZERO ALPHA this is ZERO TWO, we have completed ... at grid reference five one four one seven seven; down nine stores weapons and also six ... six niner one one seven five ... yourself as to what we do with these weapons over ... This is ZERO ALPHA wait out.

You're weak and unreadable over ... ZERO ALPHA ... confirm grid is five zero six two zero three ... That is correct over ... ZERO ALPHA roger out.

ZERO ALPHA over ... ZERO SEVEN requesting information on current status of that ... rations from last night of combat rations pack for ... over ... ZERO SEVEN, this is ZERO ALPHA, this C/S will let you know when the ... ready to go; I'm sure you have more pressing things on your mind than to worry about that. Once we have the ... organised, and a means to get it to you, we'll notify you, is that understood over ... ZERO ALPHA this is ZERO SEVEN acknowledged over.

ZERO ALPHA ... ZERO TWO completed ... purposes grid maps ... what to do with the maps, do you want them dropped off over ... ZERO TWO this is ZERO ALPHA wait out ... ZERO TWO this is ZERO ALPHA say again over ... ZERO ALPHA ... dropoff point for the maps ... at grid five one four one seven seven over ... This is ZERO ALPHA in reply to your last take maps with you ... over ... ZERO ALPHA this is ZERO TWO roger out" (IJ)

33.350MHz: 2155z 1 AVIATION, 1 HSB, CAVALIER 487 (171Av UH-1 Iroquois), CSO (Chief Safety Officer) and US 12: Aust Army Safety Net Rockhampton Sector West. "CSO wait out ... CSO over ... CAVALIER FOUR EIGHT SEVEN cleared the coastal and river sections of Mount Hummock over ... Coastline and rivers of Mount Hummock cleared ... Correct CAVALIER FOUR EIGHT SEVEN out.

ONE AVIATION REGIMENT this is CSO over ... ONE AVIATION REGIMENT over ... CSO the alternate HOTEL FOXTROT frequencies are - more to follow over ... ONE AVIATION REGIMENT this is CSO over ... ONE AVIATION over ... CSO wait ... CSO which designator are you currently using over ... CSO we're using ... currently on frequency four zero decimal three zero, requesting the four alternate VICTOR HOTEL FOXTROT frequencies for the range over ... CSO, roger, OK:

Designator 1, VHF thirty three decimal three five megahertz over ... (1AVN repeats) Thirty three decimal three five megahertz over ...

CSO; Designator 2, VICTOR HOTEL FOXTROT three eight decimal four five megahertz over ... (1AVN repeats)

CSO; Designator 3, VICTOR HOTEL FOXTROT four eight decimal zero zero megahertz over ... (1AVN repeats)

Designator 4, VICTOR HOTEL FOXTROT five five decimal one zero megahertz over ... (1AVN repeats)

HOTEL FOXTROT primary, five decimal one four zero megahertz ... (1AVN repeats)

CSO; HF alternative, three decimal one six zero megahertz over ... (1AVN repeats) HF alternative, three decimal one six zero megahertz. Is frequency four zero decimal three zero Designator 5 over?

CSO; we don't have a Designator 5 over ... ONE AVIATION, confirming our frequency four zero decimal three zero for this sector over ... CSO, wait out.

CSO, CSO this is ONE HOTEL SIERRA BRAVO (US accent) radio check over ... CSO loud and clear over ... ONE HSB out.

ONE AVIATION REGIMENT this is CSO over ... ONE AVIATION over ... Frequency VICTOR HOTEL FOXTROT four zero decimal four zero megahertz is your current frequency over ... (1AVN repeats followed by) ... The plane's airfield confirmed frequency is four zero decimal three zero megahertz; is that the correct frequency for this sector over ... CSO; roger, wait out.

US ONE TWELVE radio check over ... CSO loud and clear over ... Roger ...

ONE AVIATION REGIMENT this is CSO over ... ONE AVIATION over ... CSO your current frequency is not a range safety frequency over ... ONE AVIATION roger, what frequency would you prefer us on for this sector over ... ONE AVIATION this is CSO, frequency is VHF five five decimal one zero megahertz over ... Confirm frequency five five decimal one zero over ... CSO confirm over ... This is ONE AVIATION roger out." (IJ)

2350z CSO, US ONE TWELVE, MILITARY POLICE: Aust Army Safety Net Rockhampton Sector West with (Victorian) Aust Army helo net comms and Asian comms mixing in. "US ONE TWELVE over ... This is CSO over ... Actual snake bite victim over ... CSO, CSO say again - US ONE TWELVE this is CSO, send details over ... Roger, we have a snake bite victim at grid five six niner eight five four ... US ONE TWELVE this is CSO, roger I read back, grid five six niner eight five four over ... Solid copy over ... Roger wait out ... The MEDEVAC LZ is at grid five six seven eight five six, how copy over ... I read back five six seven eight five six over ... Copy over ... Roger wait out ... CSO, CSO this is US ONE TWELVE over ... Right now he has just been bitten, he's enroute to us at this point, over ... Roger wait out."

0030z with (Victorian) Aust Army Helo net comms breaking through, "Roger, CAVALIER C/S standing by for the CASEVAC ... Priority One CASEVAC, he's a real CASEVAC ... Roger there's an ambulance moving towards the field, there are two CAVALIER C/S at the south of the field, however it is not known at this time if they're ready to depart over."

0035z with "This is MILITARY POLICE over ... MILITARY POLICE this is CSO over ... CSO this is MILITARY POLICE, re Priority One CASEVAC, this C/S is deploying WATCHDOG Element along the route for traffic control over ... CSO this is MILITARY POLICE, do you acknowledge over ... MILITARY POLICE this is CSO, acknowledge over ... This is MILITARY POLICE acknowledged out." (IJ) Medevac comms shifted to 38.450MHz (see below).

0505z CAVALIER 488 (171Av UH-1 Iroquois) and DPRAC: Safety Net Rockhampton Sector West with "CAVALIER FOUR EIGHTY EIGHT is having no joy with FALCON, we are in vicinity of HELGA, going to the ... off Townshend Island Airspace in range activity ... can you pass that to them at this time over ... CAVALIER FOUR EIGHTY EIGHT this is DPRAC for FALCON over ... CAVALIER FOUR EIGHTY EIGHT, yes, FALCON has asked us to contact Townshend Island on range frequency, however we're badly broken ... over ... CAVALIER FOUR EIGHTY EIGHT, this is DPRAC, inform them of your position over ... CAVALIER FOUR EIGHTY EIGHT roger, once we've completed our operations on HELGA." (IJ)

0215z "US SPECIAL OPERATIONS A/C this is CHIEF SAFETY OFFICER ... I readback ... to operations ... eight six five ... US SEVEN ONE is that correct over ... CHIEF SAFETY OFFICER, this is SPECIAL OPERATIONS A/C that is correct, do you have any traffic for my station at this time over ... No over ... Roger CHIEF SAFETY OFFICER, SPECIAL OPERATIONS A/C out.

US SPECIAL OPERATIONS A/C this is DPRAC over ... SPECIAL OPERATIONS A/C this is DPRAC over ... OPERATIONS A/C EIGHT SIX over ... SPECIAL OPERATIONS A/C EIGHT SIX this is DPRAC over ... Send over ... DPRAC there is no active tracking ... or live fire along the coast ... over ... SPECIAL OPERATIONS A/C EIGHT SIX this is DPRAC over ... This is EIGHT SIX over ... DPRAC acknowledge my last over ... This is EIGHT SIX ... DPRAC have no live fire practices on your route to your area of operations once you're closer to your exercise area contact DDPRAC TOWNSHEND ISLAND over ... This is EIGHT SIX roger copy all ... DPRAC, no, once you're closer to your exercise area contact DDPRAC TOWNSHEND ISLAND over ... This is EIGHT SIX roger understand contact DDPRAC TOWNSHEND ISLAND once we get closer to the island over."

0330z "CAVALIER FOUR EIGHT NINE, CAVALIER FOUR EIGHT NINE this is DPRAC, DPRAC over ... ONE SEVEN ONE this is CAVALIER FOUR EIGHT NINE send over ... This is DPRAC over ... DPRAC, before liftoff, before liftoff contact us for live fire information over ... DPRAC, DPRAC this is CAVALIER FOUR EIGHT NINE, say again over ... This is DPRAC, before liftoff contact this C/S for live,fire information over ... CAVALIER FOUR EIGHT NINE, roger, liftoff from where, over? ... Your current location over ... CAVALIER FOUR EIGHT NINE, this C/S is airborne, presently overhead ACP? (sounded like) Manning enroute Townshend Island over ... This is DPRAC, be aware there is a serial that is about to commence on Townshend Island involving small arms to the south over ... DPRAC, DPRAC this is CAVALIER FOUR EIGHT NINE, roger copy, range practice in progress four miles south of Townshend Island over ... CAVALIER FOUR EIGHT NINE, this is DPRAC, wrong, there is a prac-

tice about to commence on Raymond Island which will then become southern half of Townshend Island, over ... CAVALIER FOUR EIGHT NINE, roger, will clearance be available to transit TOWNSHEND ISLAND, as we have transrec requesting guys offloading at range control and Townshend Island over ... This is DPRAC wait ... wait out.

FOUR EIGHT NINE this is DPRAC, you're to approach Townshend Island from the west, vicinity of Lester Island, and then track remaining north of Mount Townshend to land over ... CAVALIER FOUR EIGHT NINE roger, approach Townshend Island from the west, remaining north of Mount Townshend all times. We're currently six miles northwest of Samuel Hill and now tracking to the west of ... DPRAC roger, beware, Mount Hummock centre is live, you will need to move further north onto the QLD Sector before ... over ... CAVALIER FOUR EIGHT NINE roger, we will remain clear of Mount Hummock sector and transitting to the west of Townshend Island now, over ... DPRAC out

ONE SEVEN ONE this is CAMP GROWL CISCON (US accent), over ... CAMP GROWL this is ONE SEVEN ONE loud and clear this loc over ... Roger, I have you the same, CISCON out

This is US ONE TWELVE radio check over ... US ONE TWELVE this is CSO loud and clear over ... US ONE TWELVE radio check over ... US ONE TWELVE this is CSO, CSO loud and clear loud and clear over.

SPECIAL OPERATIONS A/C this is DPRAC, radio check over ... For your ... sitrep on the Navy Special Warfare unit activity this afternoon, they're currently experiencing engine problems, they expect to check in with your C/S at fourteen hundred over ... This is DPRAC over ... SPECIAL OPERATIONS A/C this is DPRAC over.

0410z "This is CSO over ... This is FIVE EIGHTY SIX (US accent), we're enroute to the SEAL RANGE, we have an event on over ... This is DPRAC roger over ... This is US RECON over."

This is SEVEN NINER SIX (US accent) over ... CSO over ... SEVEN NINER SIX over ... SEVEN NINER SIX this is CSO over ... Roger, interrogative, do you have a time the bird is going to land on SEVEN NINE SIX for a resupply over ... SEVEN NINER SIX this is CSO wait out ... I need to know when the resupply is over ... SEVEN NINER SIX this is CSO over ... CSO, you'll have to contact ONE AVIATION on this net for that information over ... SEVEN NINER SIX, SEVEN NINER SIX over ... This is ONE AVIATION ... ONE AVIATION, SEVEN NINE SIX, do you have a time that your bird ... coming back ... ONE AVIATION wait out.

CSO, ONE AVIATION REGIMENT over ... This is CSO, can you contact CHARLIE ECHO CHARLIE GOLF AIR on PARAKEET (Aust Defence Satellite System) xxx seven five zero one over ... ONE AVIATION REGIMENT roger out.

CSO this is ONE HOTEL SIERRA BRAVO radio check over ... ONE HOTEL SIERRA BRAVO this is CSO roger over.

This is ONE AVIATION over ... SEVEN NINE SIX, we're still waiting on an answer to our last transmission over ... ONE AVIATION we're still waiting for confirmation from squadron over ... Roger, SEVEN NINE SIX, we have been waiting, the bird was meant to be here before 12 o'clock, if possible please get here before it starts to get dark as we have to pull down our entire setup here and put it back up before it gets dark over ... ONE AVIATION roger out.

RANGE SAFETY this is TWO AFDS, TWO AFDS over ... Nothing heard out.

CAVALIER FOUR EIGHT NINE this is DPRAC, DPRAC over ... DPRAC this is ONE SEVEN ONE we'll take msg for CAVALIER C/S if you like over ... CAVALIER FOUR EIGHT NINE out to you, ONE SEVEN ONE this is DPRAC, we request loc stats on CAVALIER FOUR EIGHT NINE over ... This is ONE SEVEN ONE, loc stat for CAVALIER FOUR EIGHT NINER is in home location for ONE SEVEN ONE over ... ONE SEVEN ONE this is DPRAC, confirm CAVALIER FOUR EIGHT NINE is in same location as your C/S over ... DPRAC this is ONE SEVEN ONE, that is correct, all CAVALIER C/S are in loc over ... This is DPRAC Duty Officer I'm concerned that CAVALIER FOUR EIGHT NINE didn't contact us before moving off Townshend Island, I know I gave him a safe passage to Townshend Island more to follow over.

DPRAC did you receive my last over ... DPRAC this is ONE SEVEN ONE, say again your last over ... ONE SEVEN ONE, this is DPRAC Duty Officer, I am concerned that CAVALIER FOUR EIGHT NINE did not contact this C/S before leaving Mount Townshend, more to follow over ... ONE SEVEN ONE send over ... This is DPRAC I know I gave him a safe route to Mount Townshend, did he get a safe route from Mount Townshend from ... wait ... Off the island then contact this C/S afterwards over ... ONE SEVEN ONE, this is CAVALIER FOUR EIGHT NINER, the clearance was arranged through C/S DIAMOND to track clear of the area, and it was assumed he would coordinate that with DPRAC over ... DPRAC roger ... This is DPRAC, roger there must have been some miscommunication there as comms hasn't been passed, we'll need to try and sort it out ... out.

This is DDPRAC TOWNSHEND ISLAND wait ... This DDPRAC TOWNSHEND ISLAND, this C/S did communicate ... I did arrange a safe flight route for that helicopter to leave the island over ... DPRAC roger, we just didn't have any visibility of ... I'd say our comms with DIAMOND, that's where the breakdown is over ... This is TOWNSHEND ISLAND out."

0525z "HQ ONE BRIGADE this is CSO radio over ... Nothing heard out ... HQ ONE BRIGADE in plain radio check over ... DPRAC loud and clear CSO is the NCS (Net Control Station) of this net over ... This is HQ ONE BRIGADE roger loud and clear out." (IJ)

33.600MHz: 2345z 1 ALPHA and 1 CHARLIE with "We will inform you when they leave this Loc over ... ONE ALPHA wait out ... ONE ALPHA, FOXTROT ROMEO TANGO should arrive in your Loc in two zero mikes over ... We'll have someone on the road to marry up with them over ... ONE ALPHA acknowledged and out ... Further to that ... This is ONE ALPHA, negative, not at the moment over ... ONE CHARLIE roger ... get comms from them to call ... with that over ... ONE CHARLIE this is ONE ALPHA yes I'll attempt that and get back to you, wait out ... ONE CHARLIE out.

ONE EIGHT BRAVO, ONE EIGHT BRAVO this is ONE ALPHA this is ONE ALPHA over ... ONE EIGHT BRAVO this is ONE ALPHA over ... ONE CHARLIE this is ONE ALPHA over ... ONE CHARLIE over ... Reference your last that is a negative, we do not have comms with ONE EIGHT BRAVO ... ONE CHARLIE roger out." Followed by brief KY 57 encryption bursts. (IJ)

34.325MHz: 0500z callsigns 12 REAR and 12 BASE CAMP: USMC with brief voice bursts. "Local time over ... FORTY ALPHA ... ONE TWELVE, this is ONE TWELVE REAR over ... ONE TWELVE, ONE TWELVE this is ONE TWELVE REAR over ... This is ONE TWELVE BASE CAMP over." (IJ)

34.450MHz: 2355z Aust Army with continuous KY57 encryption bursts. (IJ)

34.500MHz: 2205z AVENGER RANGE, DPRAC PYRI PYRI and TOWNSHEND ISLAND: Aust Army DPRAC Primary Northern and Eastern Sector with "DPRAC over ... TOWNSHEND ISLAND over ... CAVALIER FOUR EIGHT SEVEN cleared TOWNSHEND ISLAND range at two one two eight zulu over ... TOWNSHEND ISLAND roger ... we have a sentry posted, request TOWNSHEND ISLAND Sector and Range Trace Air zero zero three open over ... DPRAC wait out.

TOWNSHEND ISLAND this is DPRAC over ... TOWNSHEND ISLAND send over ... DPRAC you may open TOWNSHEND ISLAND Sector and Trace Air zero zero three over ... TOWNSHEND ISLAND roger, thanks out."

2250z with "PYRI PYRI this is AVENGER RANGE (US accent), radio check over ... This is PYRI PYRI, loud and clear over ... Roger I have you the same, AVENGER RANGE out." (IJ)

2335z DPRAC Net Primary Northern and Eastern sector with "Radio check over ... COOKHOUSE FORWARD this is DPRAC, have you loud and clear over ... Roger I have you same, COOKHOUSE (US accent probably USMC unit) out.

COOKHOUSE FORWARD this is DPRAC over ... COOKHOUSE FORWARD this is DPRAC, DPRAC over ... DPRAC this is COOKHOUSE FORWARD send your traffic over ... This is DPRAC roger can you get someone to contact this C/S on landline over ... What's your number over ... DPRAC roger xxxxx five one six two two over .. Roger ... DPRAC out." (IJ)

0245z "MOUNT HUMMOCK this is DPRAC over ... MOUNT HUMMOCK over ... DPRAC, confirm you have active ALPHA SIERRA THREE FOUR over ... MOUNT HUMMOCK over ... DPRAC, I say again confirm you have activated ALPHA SIERRA THREE FOUR over ... DPRAC this is MOUNT HUMMOCK, ALPHA SIERRA THREE FOUR is not activated as yet, however we do seek approval to fire high angle over ... DPRAC wait out.

DPRAC, MOUNT HUMMOCK over ... DPRAC over ... MOUNT HUMMOCK this is DPRAC over ... DPRAC this is MOUNT HUMMOCK over ... DPRAC over ... MOUNT HUMMOCK, do you rx my last request over ... DPRAC, last request we got from you is for permission to fire high angle on ALPHA SIERRA THREE FOUR over ... DPRAC this is MOUNT HUMMOCK, you were cut off say again over ... DPRAC, I say again, last request we got from your C/S was to fire high angle on ALPHA SIERRA THREE FOUR over ... DPRAC this is MOUNT HUMMOCK ... I understand ... the request for the high angle via AS THREE FOUR, move my last AS ONE FIVE and THREE ZERO are closed over ... DPRAC confirm you have AS ONE ONE

still open over ... DPRAC, MOUNT HUMMOCK over ... DPRAC, confirm you have AS ONE ONE still open over ... DPRAC this is MOUNT HUMMOCK, we have not opened that stage as yet over ... DPRAC roger out.

MOUNT HUMMOCK this is DPRAC fetch duty officer over ... MOUNT HUMMOCK send over ... MOUNT HUMMOCK, this is DPRAC, at 10.44 this morning your C/S requested AS 11 open and it was opened to you; am I now to assume you have no tracers open throughout your sector over ... MOUNT HUMMOCK ... gave me ... to open it ... I have not yet opened it because I have not prepared a safety report from the mortar platoon; at this very moment I have no tracers I repeat no tracers open in MOUNT HUMMOCK sector over ... DPRAC, roger for your information, when you come up and request approval to open it, whether (or not) you open it down to your subordinate C/S it gets marked up as open on our map, hence the confusion, wait out ... MOUNT HUMMOCK, I also have an airspace control authority ... airspace here, are you aware of that over ... DPRAC, say again over ... MOUNT HUMMOCK, are you aware I have an airspace controller element here who is controlling the airspace here up to flight level three hundred over ... DPRAC, affirm over ... MOUNT HUMMOCK out.

This is DPRAC forward duty officer, confirm reason why he is asking to fire high angle, I believe it's on your range detail so therefore you should be authorised over ... MOUNT HUMMOCK, it is not on our range detail, we have a crisis meeting that is the reason why we are requesting it, as it not on our range detail over ... DPRAC, roger wait out.

MOUNT HUMMOCK this is DPRAC, a reference for firing, for high angle report max ord, over ... MOUNT HOMMOCK, wait out ... DPRAC this is MOUNT HUMMOCK, reference your last, max ord will be no more than fifteen thousand feet over ... DPRAC roger out." (IJ)

38.400MHz:

2310z Presumed Aust Army or US Military with brief KY57 encryption bursts. (IJ)

38.450MHz:

2255z callsigns 1 AVIATION, 171 AVIATION, 1 HSB and CSO: Aust Army Safety Net Rockhampton Sector East with "This is ONE HSB radio check ... This is CSO loud and clear over ... ONE HSB out.

ONE AVIATION REGIMENT this is CSO radio check over ... This is CSO, CSO radio check over ... ONE AVIATION REGIMENT this is this is CSO, CSO radio check radio check over ... Nothing heard out.

ONE SEVEN ONE radio check over ... ONE SEVEN ONE, this is ONE AVIATION REGIMENT, loud and clear over ... ONE AVIATION REGIMENT, loud and clear; C/S CHARLIE SIERRA OSCAR is trying to contact you this means over ... This is ONE AVIATION REGIMENT roger, out to you.

CSO, this is ONE AVIATION REGIMENT radio check over ... CSO ... This is ONE AVIATION REGIMENT, were you trying to raise this C/S by this means over ... CSO, yes over ... This is ONE AVIATION REGIMENT, was that for a radio check over ... CSO yes over ... This is ONE AVIATION REGIMENT, roger out." Was RETRANs to 33.350MHz. (IJ)

0016z CSO, US 12, DPRAC, DUSTOFF 485 (UH-1) and LZ; "CSO, CSO this is US ONE TWELVE over ... US ONE TWELVE this is CSO over ... Roger the snake bite is believed to be an Eastern Brown over ... I readback the snake bite believed to be a brown snake over ... Roger over ... CSO out.

Roger grid five six seven eight five six how copy over ... ONE TWELVE, ONE TWELVE this is LZ, what's the C/S for the medevac bird over ... US ONE TWELVE ... MEDEVAC, MEDEVAC this is ONE TWELVE radio check over ... US ONE TWELVE this is DPRAC, DPRAC over ... This is US ONE TWELVE over ... This is DPRAC, C/S is CAVALIER - correction DUSTOFF - FOUR EIGHT SEVEN I say again, DUSTOFF FOUR EIGHT SEVEN over ... Roger DUSTOFF FOUR EIGHT SEVEN over ... DPRAC roger out.

DUSTOFF FOUR EIGHT SEVEN this is US ONE TWELVE ... ONE TWELVE, ONE TWELVE this is LZ over ... This is ONE TWELVE over ... If I can't talk to this bird with this radio, I'm going to need to relay through you ... Roger over ... what you need to do is tell him I'm going to mark this LZ with red smoke whenever he's ready; I want him to do one pass over the LZ first and then for him to come back, and he needs a LZ brief and I need you to let him know that, and I'll give him one over ... Roger over.

DUSTOFF FOUR EIGHT FIVE, send over ... This is DPRAC did you copy US ONE TWELVE's grid reference to LZ over ... Affirmative over ... This is DPRAC say again say again over ... DUSTOFF FOUR EIGHT FIVE I say again grid five six seven eight five six over ... This DPRAC, US ONE TWELVE will mark the LZ with red smoke over ... DUSTOFF FOUR EIGHT FIVE roger out.

DUSTOFF FOUR EIGHT FIVE this is US ONE TWELVE ... US ONE TWELVE this is DUSTOFF FOUR EIGHT FIVE send over ... What I'd like you to do is make a pass over the LZ, if you need a LZ brief I can give you one on wind conditions, conditions of the LZ, and I'll mark with red smoke as soon as you're ready ... DUSTOFF FOUR EIGHT FIVE, roger, will call once one minute inbound and we'll instruct you to throw smoke then over ... Copy all ... DUSTOFF FOUR EIGHT FIVE out.

US ONE TWELVE out ... US ONE TWELVE this is DUSTOFF FOUR EIGHT FIVE over ... DUSTOFF FOUR EIGHT FIVE this is US ONE TWELVE send it over ... US ONE TWELVE, US ONE TWELVE this is DUSTOFF FOUR EIGHT FIVE, DUSTOFF FOUR EIGHT FIVE throw, throw over ... Roger DUSTOFF FOUR EIGHT FIVE this is US ONE TWELVE I have a visual on you at this time, you need to go ahead and proceed to the west of where you're at right now to where LZ is over ... US ONE TWELVE, US ONE TWELVE this is DUSTOFF FOUR EIGHT FIVE throw smoke over ... OK roger popping red smoke out.

DUSTOFF FOUR EIGHT FIVE this is US ONE TWELVE, LZ marked with red smoke over ... DUSTOFF FOUR EIGHT FIVE, DUSTOFF FOUR EIGHT FIVE smoke sighted over ... Roger this is US ONE TWELVE, copy smoke sighted out." Freq was not RETRANs to 33.350 due to Aust Army helo net interference on 33.350. (IJ)

Again, many thanks to Ian Julian for a sterling running commentary on Tandem Thrust 2001 comms.

$1.5 Billion Worth of RF Spectrum

– Is it worth 17 cents a day to **YOU**?

The Radio Frequency spectrum is worth around one million dollars per Megahertz to commercial interests, and we Amateurs have the use of over **1.5 GHz** of it between 160 metres and 1.25cm – plus nearly 22 GHz more in the higher bands.

RF spectrum is in constant demand by commercial spectrum users.

Your Amateur licence fee does not guarantee you continued access to any of these bands, but for as little as ***17 cents a day***, you can help keep the Amateur Bands in Amateur Hands.

WIRELESS INSTITUTE OF AUSTRALIA

If the WIA isn't speaking for you, then who is?

Wireless Institute of Australia

www.wia.org.au

Ph: (03) 9528-5962
Fax: (03) 9523-8191

Russell Bryant reviews the

YUPITERU MVT 7300

The first Yupiteru I reviewed was the MVT5000 handheld, which was a lifetime ago, in November 1989. It was the first scanner if my memory serves me correctly, to offer continuous coverage, albeit from 530kHz to 550MHz.

In the past 10 or so years a vast number of portable and to a lesser extent mobile Yuppies, as they have become affectionately known, have graced our shores and developed a devoted following. The latest to arrive here is also a handheld, designated the MVT7300 by the manufacturer.

As the name implies, the MVT7300EU, is a continuation of the popular 7000 series, which includes the MVT7000, MVT7100 and MVT7200. Just by way of interest, Yupiteru numbers its handheld scanners with odd numbers, while mobile or desktop units receive even-number identification.

Back to the matter at hand. The 7000 series units feature almost all the average scanner enthusiast could desire in a handheld and then some. How do you improve on the MVT7200, which is seemingly the ideal receiver? It's not easy, yet Yupiteru has managed to take the MVT 7000/7100/7200 and make this portable just that little bit better.

WHAT DO YOU GET FOR YOUR MONEY?

The MVT7300 is the smallest Yupiteru thus far seen in Australia. Its vital statistics are 60mm wide x 120m high x 32mm deep. With batteries installed and the supplied telescoping antenna attached, it weighs about 310 grams. A nice handful is a good analogy.

Aesthetically the MVT7300 is pleasing, finished in a mid-grey tone, with a chrome frame around the LCD. This Yupiteru, like the others, employs the latest microprocessor technology to control all functions with the exception of volume and muting. These remain the old-fashioned rotary type that has been around since the scanner was invented.

The MVT7300 covers a wide frequency range from 530kHz up to and including 1320MHz, which means there isn't much you will not be able to tune in.

The MVT7200 started the trend, and the MVT7300 continues it by offering an increased number of reception modes. It supports SSB, AM, FM and WFM, and now includes narrow AM mode, (NAM). This provides better reception of AM broadcast stations, enabling the user to select low-signal stations in the noisiest environments.

Many of today's high level scanners – and clearly the MVT7300 is in this category – allow the programming of almost unlimited search increments, Yupiteru has decided to furnish this receiver and many of its others with a large number of preset search steps. In this case they are, 50Hz, 100Hz for use on SSB only, 0 1,0 5, 6.25, 8.33, 9, 10, 12.5, 15, 20, 25, 30, 50, 100 and 125kHz. In wide FM mode only the 50, 100 and 125kHz steps can be enabled. For those who read Bob Bell's column recently on the introduction of the 8.33kHz step for airband communications in Europe will find the inclusion of that step in the MVT7300 an advantage when the inevitable happens here.

The MVT7300 has inherited none of the physical features of the MVT7000/7100/7200; in fact it is interesting that Yupiteru has continued with the 7000 number sequences rather than starting a new one.

The front panel has changed dramatically with a departure from the standard 'thirds' concept. The top escutcheon plate is home to the BNC antenna connector, concentric volume and squelch pots as well as the tuning knob. Immediately below on the front user interface, is the power key. Under that is the LCD display and the keypad.

By offsetting the speaker to the right in the final third, Yupiteru has continued the keys down the left side of the front panel. All keys are of a translucent, rubberised material allowing the lamp to back light for low-light conditions. Their tactile feel is a little spongy for my liking, but otherwise no problems here.

On the left edge of the MVT7300 is the SCR/AMW key (scrambler decoder and auto write key), the lamp button and the MONI or monitor key.

On the right edge is the earphone socket and external power jack. Operationally much is the same, the MVT7300 has the now-standard 1000 memory channels, which can be further divided into 10 lots of 100. Likewise, 10 search banks can be programmed, each with its own upper and lower limit, frequency step, and reception mode. During a search, up to 500 undesirable frequencies can be locked out of the sequence. This is particularly useful if a birdie appears midway through the search and constantly interrupts the process.

PERFORMANCE ON MEDIUMWAVE MAY BE SLIGHTLY REDUCED

The MVT7300 does not have a ferrite rod antenna like the MVT7200, so performance on mediumwave maybe slightly reduced. I would say that the Yupiteru's reception of AM is on par with the early model AR8000s.

Another thing that Yupiteru has over just about every other scanner is outstanding audio reproduction. This characteristic comes to the fore when listening to FM broadcast stations, it isn't Dolby stereo, but it's not bad either, considering the speaker size and after all, this is a scanner!

Regular Yupiteru users will note the excellent sensitivity of the MVT7300. It hears things that others don't. This is surprising when you compare the figures quoted in the owner's manual. Maybe a case

of erring on the side of conservatism?

In the past, I have criticised scanner manufacturers, including Yupiteru for supplying telescoping whip antennas. Yes the telescoping aerial does provide better signal delivery, but it is cumbersome and awkward, especially when mobile or on foot. A nice gesture would be to put both the telescoping and the rubber duckie in the box and allow the consumer to decide which one suits their needs. I doubt the cost would add significantly to the retail price.

While discussing the bits and pieces supplied, your Yupiteru box comes with the radio, instruction manual, aforementioned telescoping aerial, ear phone, 6 x AA 1300mA Ni-cad batteries, a battery charger (more on these later), belt clip and finally an English instruction manual.

While six rechargeable batteries are supplied with the receiver, it requires only three to drive it. That means a constant supply of freshly charged batteries could be maintained.

On the subject of batteries, most, if not all the current range of high-tech handheld receivers place heavy demands on their internal power sources. The MVT7300 is no exception. It consumes around 180mA of juice from the three 1300mA cells.

Syncro acknowledge that these types of scanners do demand high-power batteries, and have taken the unusual step of providing the higher capacity cells and suitable charger with the MVT7300. If other manufacturers and suppliers can just follow suit, there will be no argument.

The 61-page user guide is generally good. One or two examples of over explanation or fractured English exist, but overall they are not bothersome.

THE MOST INTERESTING IS ITS ABILITY TO UNSCRAMBLE TRANSMISSIONS

The MVT7300 incorporates a number of features not normally seen in a scanner, let alone a handheld. The first and possibly the most interesting is its ability to unscramble transmissions. Before getting too carried away, the MVT7300 cannot decode digital signals or unscramble DVP so don't buy it with that in mind. In this case, it is voice-inversion scrambling that can be resolved.

The way inversion-scrambling works is very simple, it just takes the high-level sounds and makes them low, then takes the lows and makes them highs. While not common in this country some two-way customers do use voice inversion and this feature will come in handy if one of your target groups happens to do so.

The other unusual feature is a variable backlight. The LCD display and keypad backlight can be toggled between a yellow/green hue and an orange one. This is an excellent idea, which should be included in all scanners!

When the MVT7300 is turned off the display shows the time of day. The unit can also display the time while being used, by simply pressing the Enter key when in VFO mode.

The current time will show for five seconds. The display then reverts o the previous screen. Should you not want the time displayed when the unit is shut down, it can be switched off.

NO DIFFICULTY OPERATING AND PROGRAMMING

If you own, or have ever owned a Yupiteru scanner, irrespective of the model, you will have no difficulty operating and programming the MVT7300. To its credit, Yupiteru has maintained this constant in an ever-changing world. For some reason Yupiteru has not incorporated a computer interface into this model. You can however clone units, which is a start. I suppose if someone cares to write a program to emulate the cloning parameters, you would be able to upload/download at least.

The 7000 series units feature almost all the average scanner enthusiast could desire in a handheld and then some...

Returning to the sensitivity for a moment, I compared the earlier model MVT7200 to the MVT7300 and found the later rates as follows. Frequency range is from 530kHz to 1320MHz, however, it will tune to 100kHz. Sensitivity varies according to band and receive mode employed. The main bands are; 2-30MHz AM 2.5uV, SSB 1.0uV; 30-470MHz FM <0.5uV, WFM <1.0uV, AM <1.0uV, SSB <0.5uV; 470-830MHz FM <0.75uV, WFM <1.5uV; 830-1000MHz FM <0.75uV; 1000-1300 MHz <1.0uV.

As mentioned before, this Yupiteru has 1000 memory channels broken into 10 lots of 100. Its one priority channel can apply to any of the 1000 channels.

The MVT7300 will scan or search at about 30 channels/steps a second. Current consumption is 180mA in normal mode, dropping to 105mA in wait or sleep mode.

The 8-ohm speaker delivers 90mW of audio, which is about par for radios of this type.

To avoid images, the MVT7300 incorporates triple conversion, with the first IF being around 600MHz.

With the exception of the audio level all other specifications are identical, whether this is by design or accident I don't know, however it may be doing this unit a grave injustice when it comes to sensitivity.

Page 40 of the user manual lists, under the heading of Useful Functions, a number of features that will enhance your scanning or allow you to tailor the operation of the MVT7300 to suit your needs. First up is Monitor, which overrides the squelch setting to permit clearer reception of low-power signals.

Next up is the lamp. I have already mentioned that the colour of the backlight can be altered, and the procedure for doing so is detailed here.

The lamp when activated stays on for five seconds provided no other keys are pressed.

If any keys are pressed while the lamp is on, it remains so for about five seconds after the last key is depressed

Keypad beeps evoke more reaction from scanner enthusiasts than any other feature, so to please all, the keypad beep of the MVT7300 can be left as is, or muted with the push of a couple of buttons. The keypad can be locked to prevent accidental activation.

Two other useful functions include attenuation and battery save. The former knocks about 15dB off any incoming signal, so prudent use of the attenuator is advised. On a positive note, the attenuator settings are channel specific, rather than universal.

The battery-saving circuitry can be handy for those wanting the maximum possible endurance from the internal batteries. To provide the best possible combination of sleep and work time, Yupiteru has incorporated three battery-saving ratios into the MVT7300.

The ratios and times are: 1:1 – 0.3s active, 0.3s inactive; ratio 1:3 works the unit for 0.3s and puts it asleep for 0.9s, while the final ratio of 1:5 equates to 0.3s active and 1.5s inactive. If during the active period a signal is detected by the receiver the battery-save mode is overridden and the audio passed to the speaker. If no activity is present then the MVT7300 starts the battery-save cycle you have chosen.

In summary, if you need a scanner priced at less than $700, that offers exceptional audio qualities, wide frequency coverage, multiple reception modes, including narrow AM, as well as ease of operation, together with better-than-normal sensitivity and overall specifications, then maybe the Yupiteru MVT7300 is for you.

Syncro Australia Communications Specialist supplied the review rig.

SUBSCRIBE

to Radio & Communications magazine and ensure your copy of the industry's "must read" publication – and all at discounted rates!

Subscribing also insures against any interim price rises.

It's the way to go!

AUSTRALIA (GST incl)	**$55 per year (12 issues)**	**$110 per two years (24 issues)**
NZ, SE ASIA	**A$80 per year (12 issues)**	**$160 per two years (24 issues)**
REST OF WORLD	**A$95 per year (12 issues)**	**$190 per two years (24 issues)**

Radio and Communications
Incorporating AMATEUR RADIO ACTION and CB ACTION

Subscription Form
(new and renewals)

NAME: _____

ADDRESS: _____

_____ POST CODE: _____

Phone: _____ Fax: _____ email: _____

Cheque enclosed for _____ or debit my VISA / BANKCARD / MASTERCARD / AMEX

Card No. ☐☐☐☐ ☐☐☐☐ ☐☐☐☐ ☐☐☐☐

Signature _____ Exp _____

Tick here if this is a renewal or addition to an existing subscription ☐

Post to Radio & Communications Subscriptions, PO Box 1010, Caulfied North, VIC 3161.
If you are paying by credit card, you may fax this form to (03) 9527 7766 or email your details to: msnews@ozemail.com.au

THE 50MHz DX Reflector

By **Jack Haden** VK2GJH (Email vk2gjh@usa.net)

It's just about all over for another season; the winter lull has just about set in, more so for the people in the southern states of Australia. Many expected a European opening during the late March to early May DX window, but sadly it didn't materialise. The path to Central America and the Caribbean was more than generous to us this year with many picking up the odd new entity along the way.

So, this will be the last 50MHz DX Reflector for the time being, as you can see by reading DX Log Book, things just withered away in May with winter on the approach. The band will not be totally dead during winter though – interstate and trans Tasman contacts will take place from time to time. Looking back there's little doubt that we've had an excellent DX season so far this year with some 66 DXCC entities reported as worked in Australia so far in 2001.

TX0C (QH-90)

One of the highlights was that many in the southern states worked **TX0C** (QH-90) in the Chesterfield Islands, one of our newest DXCC entities. Much criticism was previously directed to DXpedition operating ethics (see May 2001 column) by the VK/ZL community who were not afforded a look in at all. The **TX0C** operation made up for a lot of previous grievances, they worked many VK1, 2 and 3 stations on the 28th and 29th April. Credit for this must be extended to Philippe **FO3BM** who handled the 50MHz side of the **TX0C** operation in a very professional manner. Philippe knows, and has been part of the 50MHz DX scene in the Pacific for many years now; his experience and courtesy really paid dividends for the VK/ZL community. Also around on the 28th was **V63LJ** (PJ-99) on Yap Island from 2230z into southern VK4 and northern VK2, plus **T88CL** (PJ-77) into northern VK4.

ODDS & ENDS

Asian notes

Japan always seems to be on the receiving end of good DX, so it might be quiet in the south, but north of the equator things are far from dead. The following DX was reported in JA during May 2001 on six. 3B6RF, 3D2ER, 9M2KE, 9M6CT, 9N7WU, 9V1DJ, 9V1JA, BV0KWC, BV3FG, FR1AN, FR5GZ, FW5ZL, KH2/JM1LJS, JD1BCK, JD1BIA, P29PL, P29ZTC, T88LJ, V63LJ, V63LY, V63YV, VQ9IO, VQ9NL, VR2DXA, VR2IL, VR2LC, VU2RM, VU2ZAP, XV3AA and YC1MH.

The band will not be totally dead during winter though, interstate and trans Tasman contacts will take place from time to time. Looking back there's little doubt that we've had an excellent DX season so far this year with some 66 DXCC entities reported as worked in Australia during 2001.

Azerbaijan (LN-40)

A surprise contact during the recent VK9ML (QH-72) operation was a 50MHz contact with **4K4P** (LN-40) in Azerbaijan at 2247z on 21st April. So it's nice to know that there is some activity on six from Azerbaijan, many no doubt will need this for a new one.

East Malaysia 9M8

Presently I am considering a combined holiday and DXpedition trip to Kuching (OJ-51) in Sarawak around late September. It all hinges on the performance of the Australian dollar to the Malaysian Ringgit, reasonable airfares and suitable accommodation to set up a transmitting station. Many Japanese 50MHz DXers are interested in the semi rare 9M8 prefix plus the chance at a new grid square OJ-51. However, very few in VK/ZL have expressed any interest so far. Most East Malaysia 50MHz activity so far this cycle has came from 9M6 in Sabah to the north.

Ethiopia (KJ-99)

Claudio **ET3VSC** advises the DX community that his 50MHz beacon ET3VSC/b (KJ-99) is now back on air and can be found on 50.034MHz.

FW5ZL QSL route

Guy has announced that he has segregated his HF and 50MHz QSLing to make things easier for him. Toshi JA3EMU has been appointed by Guy to look after the 50MHz QSL cards, you can send direct to Mr Toshiyuki Tanaka, 11-22 Higashi-Kourishinmachi, Hirakata City, Osaka 573-0077, Japan. HF cards still go direct to Guy on Wallis.

Japan & 50MHz

It was most interesting to read some six-metre information supplied by Shirow JF6DEA on the Japanese situation. First Class licence holders are allowed 1000 watts, 2nd Class 200w, 3rd Class 50w and 4th Class just 20 watts on six. Mobile stations are limited to 50 watts for 1st, 2nd and 3rd Class licence holders whilst 20 watts for 4th Class. All modes are permitted but, unlike Australia, no repeaters are permitted on six. There's no restriction of polarisation and antennas no matter what class of licence. There's an emergency calling frequency of 50.100MHz and, like most other countries, the DX call frequency is 50.110MHz. The allocation 50.250-51.000MHz is reserved for domestic/contest operating on SSB and AM. Narrow band digital modes are permitted between 50.900-51.000MHz also. FM mode is permitted between 51.000 to 52.500MHz but no repeaters are allowed.

JD1/O & JD1/M
You **JD1BIA** (QL-??) has been very active on 50MHz from Ogasawara in recent weeks working into Japan and South East Asia. A number of VK worked him last year on six, QSL to his CBA. Minami Torishima is quite active too with Katsumi **JD1BCK** (QL-64) doing the honours.

LX1SI silent key
Some rather sad news out of Europe is that veteran 50MHz DXer Marcel LX1SI (JO-20) passed away on the 10th of May aged 80 years. Marcel was a very keen six-metre enthusiast well known and respected in European DX circles. When Luxembourg approved 50MHz operating for radio amateurs in 1990 Marcel was one of the first on air, subsequently over the years he made some 60 "firsts" on six for the Luxembourg 50MHz records.

Mellish Reef (QH-72)
It's all over for the time being, and it was a pretty successful DXpedition at that. The team were on air for a total of 76 hours and 53 minutes working a total of 10,428 contacts at an average on 2.26 per minute or 135.63 contacts per hour. Some 1,667 people were worked on 50MHz with 194 of these on CW and 1,473 on SSB into four continents and 13 CQ zones. All up some 20 DXCC entities made the log on six, they being 4K4, BV, DU, FK, HL, HP, JA, JT, K/W/N, KH2, KH6, KH8, P4, TI, V73, VK4, VR2, YB, YS and ZL. Only one ZL was worked, Kerry ZL2TPY (RF-70) and some 33 VK, all of these were VK4's, no other states/territories in Australia made it. The best performing bands all up in percentage totals 10m (43.2%), 15m (23%), 20m (17.4%) and six with 16%. Thanks to Adam VK4CP for supplying the data.

Nauru (RI-39)
Rex VK8RH has been active on six from Nauru as **C21RH** (RI-39) during May. A basic dipole was used with an IC-706 transceiver. Rex will be returning to Nauru from time to time and hopes to upgrade the antenna to a beam. The international call book gives VK4AAR as the QSL manager for Rex as VK8RH so I presume the C21RH will go the same route.

Panama beacon (FJ-09)
The Radio Club De Panama has established a beacon on 50.095MHz with the first transmission on May 13th at 1500z. The beacon has the callsign **HP1RCP** and is located at Cerro Jefe (FJ-09) some 3000 feet above sea level. A Cherokee handi-talki AH-50 delivers just 0.5 watts to a quarter wave vertical. Reception reports can be sent to *HP1BSL@hotmail.com* or *HP1AC@arrl.net* at any time.

PY5CC into VK2
Peter PY5CC (GG-54) was heard in most parts of VK2 on April 28th (191-04-03) around 2348z creating a flurry of activity on 50.110MHz. Despite some comments circulating, it was just that, Peter was "heard" but worked nobody in either VK1, 2 or 3.

Confirming my previous comments, an email from Peter read: "Last year, as you know Jack, I worked into VK4 via the long path, and again this year with an added bonus being VK8. I have never worked VK1, 2, 3, 5, 6, or VK9 to date. I did work Moss VK7IK in Hobart via the South Pole short path on 20th April 1991 at 2358z, so again some 10 years later we see that path emerge once again. More recently, on the 28th April 2001 at 2350z I had V31PC and a KH6 station very strong; also I noted the VK video strength three on scatter via Central America. At the time V31PC was into VK, but I heard nothing at my end. Maybe some southern VK heard my signals; I use a very big station here. I operate two large 11 element (2.5 WL) and a kilowatt amplifier. So I am sorry to say, despite reports/rumours circulating, I did not work any VK in that opening on 28th April 2001." (Congratulations to Peter for working his 207th DXCC entity on 50MHz with a contact to **EK6AD** in Armenia on 05th May 2001, well done.)

Most morning indicators during March and April had a weak "grey line" upswing around 1930-2000z but then conditions trended down rapidly until some F2 developed, mostly from 2200z. April 07 and 09 were best days, lots of Central America, Pacific, some South America and West Coast USA.

Saipan (QK-25)
Although far too late for southern VK, those in the north might like to look for **KH0/JE1RKK** (QK-25) from 22-25th June. In addition, **KH0/JA1TCF** (QK-25) and members of the Chichibu DX Club from 29th June to 01st July. QSL to respective home calls.

Taiwan BV2DP (PL-05)
Richard Lu **BV2DP** (PL-05) has worked hard setting up a home page on the Internet covering 50MHz DX activity in Taiwan. Richard makes mention that quite a few Taiwan DX "firsts" are on the site and encourages all six metre enthusiasts to visit the site. There are two paths, the first is *http://www.bv2dp.com/2001.htm* and the other is *http://www.bv2dp.com/bv50first.htm*.

VK2QF Summary
It's hard to describe the immediate "post solar peak" equinox as anything but lack lustre with its shallow indicators, patchy openings and relatively short distances made! The usual February Class-1 TEP openings to Japan were good, strong signals and likely indicated a good equinox. Most morning indicators during March and April had a weak "grey line" upswing around 1930-2000z but then conditions trended down rapidly until some F2 developed, mostly from 2200z. April 07th and 09th were best days, lots of Central America, Pacific, some South America and West Coast USA. Several Oregon stations were worked on the 09th for my 21st US state on six. Then Easter Island with Arliss CE0Y/W7XU on the 09th April was one I wouldn't dare to repeat, it took some 25 minutes to get a slot, strong side scatter signals but difficult to break the US pile ups!

Probably the most amazing event was hearing traces of Peter PY5CC working V31PC in Belize, no hope of a contact on SSB and even CW would have to be very switched on to have made it for the few minutes he and one other South American station was heard. Afternoon propagation was also sparse, with only relatively short TEP to Japan and South Korea with the 21st of April being the best and longest, remaining open at this location until 0800z. This opening had the deliberate 50.110.5MHz carrier present. There has been virtually no early morning TEP (1400-1600z, seen in Cycle 21 & 22) so far this cycle.

Even so, with 25 countries worked by me, for this season was well worth doing just for fun and the single new DXCC entity. Nev's total for the period 01st Feb through to 03rd May 2001 was 239 contacts to the following entities. JA (166), VK (07), KH6 (06), FK (02), USA (12), HL (10), ZL (01), 3D2 (01), 3D2/Rot (03), V73 (05), KH4 (02), YS (05), TI (03), PJ (03), FW (02), YV (01), ZK1 (01), CE0Y (01), TG (01), V31 (02), HR (01), TX0 (01), FO (01) and KH8 (02). Entities heard, but not worked

4W6, XE, ZF, HP and DU. CW accounted for 57% and SSB 43%. Special thanks to Nev for sharing this news with us.

VK3SIX/b (QF-02) closed
Steve VK3OT, custodian of **VK3SIX/b** (QF-02) announced that the 50.053MHz beacon has been closed down until further notice. It's hoped that the beacon will reappear possibly around spring, or later, on the new frequency of 50.293MHz. The closure of the beacon is a great loss as it was always a valuable indicator of propagation, not only to western Victoria, but also to neighbouring VK5 in Mount Gambier. The only VK3 beacon left is VK3FGN (QF-14) on 52.438MHz CW which is now reported to be on 24 hours.

VK4SIX/b (QH-30) heard
Mystery surrounds the May 02nd reception of a Queensland beacon on 50.050MHz signing as **VK4SIX** (QH-30), it was heard in KH6 and JA quite well. Enquires made found the custodian of the beacon to be Gary VK4ABW (QH-30) who runs the beacon now and again.

DX LOG BOOK

Disclaimer: Whilst every effort is made to ensure the accuracy of the events reported, it's virtually impossible to verify every snippet of news received. Editorial comment is derived from a number of sources in good faith, and thus is published as such, possibly with some errors.

DX grid squares are provided where known, all dates/times are in the UTC/GMT format, and WWVH indices are given in brackets for each particular UTC day.

Tue 01 May (188-02-01) was reasonably quiet by all accounts; weak signals from **XE1KK/b** (EK-09) were noted in VK2 and VK3 around 2325z. Later, in the afternoon JA was into most of east coast VK through to Victoria. Norm **VK3DUT** (QF-32) had **ZL1UHF/b** (RF-73) 599 report at 0754z. At 0840z Gary **VK2KYP** (QF-56) reported Malaysia, New Zealand and 49.750MHz TV audible in Sydney. Norm **VK2ZXC** worked **ZL4LV** (RE-54), **ZL3NW/1** (RF-73) and **ZL2TPY** (RF-70) from 0844z. Some VK4's also heard **V63LJ** (PJ-99) on Yap backscatter.

Wed 02 May (210-03-01) didn't show much promise, however, Peter **PY5CC** (GG-54) had VK4 TV video on 46MHz at 1505z long path. Norm **VK3DUT** (QF-32) had **XE1KK/b** (EK-09) 419 report at 2140z. John **VK4FNQ** had the usual from Asia plus Sun **DS5GSP** (PM-47) 5x9 at 0930z. Scott **VK4JSR** (QG-62) heard **V63YV** (QJ-57) in Chuuk State (formerly Truk) 5x9 looking for VK.

Thu 03 May (176-04-02) showed little promise, John **VK4FNQ** worked **WH6O** (BL-11) at 0710z 5x9. The usual JA/HL/V73/KH6 also noted in the north.

Fri 04 May (172-06-02) again showed very little, with John **VK4FNQ** reporting **V73SIX/b** (RJ-39) at 0930z and Sun **DS5GSP** (PM-47) heard 5x6. Later **VR2XMT** (OL-72) was noted 5x1 at 1402z.

Sat 05May (176-09-03) presented very little worth mentioning, although the band opened from ZL to **K2RTH** and **ZF1DC** (EK-99) from 2010z, moments later the ZL's were into VK2. Later in the day from around 0442z there was VK4 to the USA. Calls noted were **N7DB** (CN-85) OR, **KB7WW** (CN-85) OR and **W7FI** (CN-87) WA amongst others. The usual from JA/HL/V73/VR2 and KH6 was heard in northern VK4 during the night.

Sun 06 May (161-08-02) exhibited very little in most of Australia except for the usual Asia/Pacific opening in the north. John **VK4FNQ** reported Ted **NH6YK** (BL-11) at 0625z, **V73SIX/b** (RJ-39) and Tim **V73AT** (RJ-38) at 0909z, **VR2XMT** (OL-72) 1250z 5x9 and **HL3IUA** (PM-36) at 1351z.

Mon 07 May (155-06-04) displayed very little in the way of real DX. The usual JA, HL, V73 and VR2 path was about in the north, although signals were very poor.

Tue 08 May (138-17-01) was very quiet with JA/HL/V73 in northern VK4. Meanwhile in Sydney the MUF struggled to rise with reports of 49.750MHz TV popping in and out of the noise.

Wed 09 May (129-10-03) showed nothing of significance to report on the east coast, however over in the west Graham **VK6RO** (OF-77) reported a path to Japan, as did northern VK4 and VK8.

Thu 10 May (129-27-05) indicated that the winter lull is fast approaching. JA and HL were noted in northern VK4. John **VK4FNQ** remarked that the signals from Asia were dropping away as each day passes, winter is on the way!

Fri 11 May (130-26-03) had 46.171MHz Toowoomba TV heard in California around 2300z but nothing further eventuated. John **VK4FNQ** reported **V73SIX/b** (RJ-39) 0230z and **KH6SX** (BL-11) 0327z. Meanwhile, down south VK1, 2, and 3 had a path to JA7 and JA8 from 0350z with a few contacts taking place. John **VK4FNQ** noted **T88LJ** (PJ-77) in Palau at 1159z 5x9.

Sat 12 May (137-09-02) was very quiet, however the VK6s had a path to JA and detected a huge pile up chasing **XV3AA.** Graham **VK6RO** (OF-77) worked **T88LJ** (PJ-77) at 0740z 519 report on CW. It was also reported that **VK6WD** and **VK6JJ** (OF-88) could hear **XV3AA** immersed in a JA pile-up but despite a request by **JA2EGE** for **XV3AA** to look for VK6 nothing became of it. Haven't were heard that story somewhere before? Don **VK6HK** (OF-78) reports reception of **9M2TO/b** (OJ-05) frequently. John **VK4FNQ** had **T88LJ** (PJ-77) at 1005z and again at 1114z 5x5, Rex **C21RH** (RI-39) at 1123z 5x7, **4W6UN/b** (PI-21) 599, and **T88LJ** (PJ-77) again at 1151 and 1330z 5x9. Meanwhile, across the Tasman V73 plus JA were noted by Kerry **ZL2TPY** (RF-70) from 1200z.

QSL ROUTES...

3D2NV/P via JA1NVF, **8Q7JY** via JA1JQY, **9N7WV** via JA8MWU, **C21RH** via VK4AAR, **DS5GSP** at CBA, **FW5ZL** (50MHz only) via JA3EMU, **JD1BCK** via JM1TUK, **JD1BIA** at CBA, **T88LJ** via JH8DEH, **TX0C** (50MHz only) via JA1BK, **V63LJ** via JH8DEH, **V63YV** via JA1WPX and **V73SP** via V73AX. Additional QSL routes were published in the May and June issue columns.

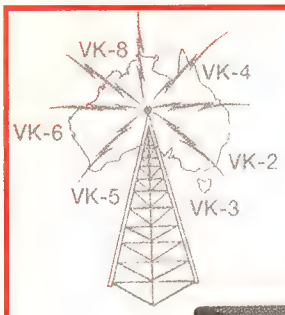
50MHZ IN 2001

The following DXCC entities, to the best of my knowledge, have been worked in Australia on 50MHz during 2001 to date (01st Jun): 3D2, 3D2/Rot, 5X1, 7Z1, 9V1, 9M2, 9M6, A35, A45, A61, BQ9, BV, BY, C21, CE, CE0Y, CX, DU, EY8, FK8, FO, FW, H44, HI8, HK, HL, HP, HR, JA, JY9, KH2, KH4, KH6, KH8, KL7, LU, P29, P49, PJ2, PY5, S79, T30, T88, TG9, TI5, TX0, UK9, UN3, VE7, V29, V31, V63, V73, VK9M, VK9N, VQ9, VR2, VU2, W/K/N, XE, YB, YS, ZF1, ZK1 (Nth), ZL and ZP. USA states worked in Australia: AK, AZ, CA, HI, NV, OR, TX and WA.

CONCLUSION

As usual, this column would not be possible without the valuable assistance from the following contributors: Arne SM7AED, Peter PY5CC (GG-54), Don VK6HK (OF-78), Graham VK6RO (OF-77), John VK4FNQ (QG-39), Adam VK4CP (QG-62), Ray VK4BLK (QG-56), Steve VK3OT (QF-12), Nev VK2QF (QF-42), Phil VK2FHN (QF-55), Vince VK2VC (QF-56), Bob VK2DN (QF-56), Norm VK2ZXC (QF-55), OZ50MHz Bulletin, OPDX Newsletter, SMIRK, UKSMG and others.

73's de Jack VK2GJH (QF-56).



AMATEUR TRANSCEIVER RADIO CENTRE

CREATE ROTATORS – DIAMOND ANTENNAS – GAP

Check out our web site for latest weekly specials

KENWOOD

Authorised Dealer

Alinco, Australia's No.1 Factory Direct Importer - AUTHORISED DEALER.
Massive monthly stockist – Best Prices. New DJ-V5E 6W, DR-601E, DX-70TH, DJ-X10E.
AUSTRALIA'S FIRST ARRIVALS!
Genuine export models. 3 Year Warranty.
Professional service and advice.

TS-2000
Now available

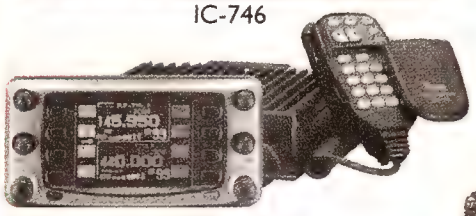
IC-746

TH-G71A

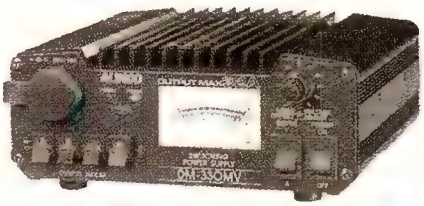
TH-D7E

VC-H1

AR-8200



IC-2800H



DM-330MV

ALINCO

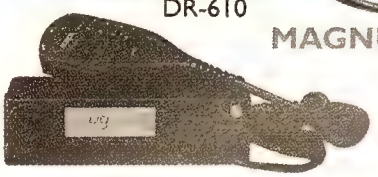
Authorised Dealer

AMERITRON

TS-50S

DR-610

MAGNUM



DR-140

BUTTERNUT

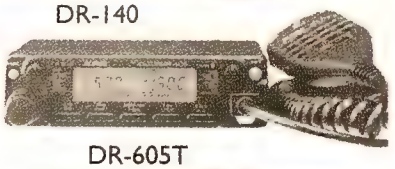
DJ-X10E

DJ-G5

DJ-C5

DJ-195

DJ-V5E

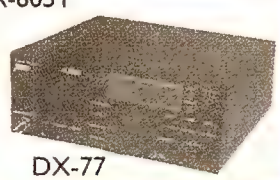


DR-605T

cushcraft

DX-70TH

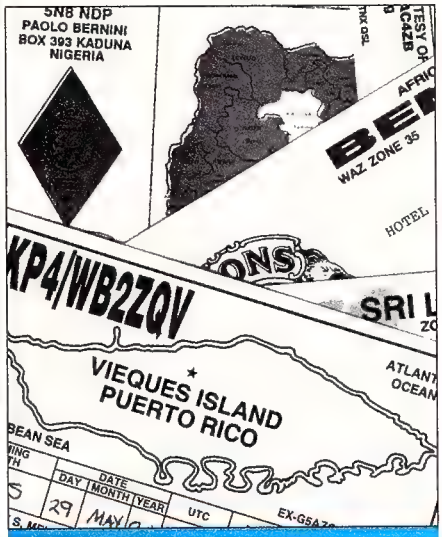
JRC



DX-77

PHONE (02) 9896 2545
FAX (02) 9636 6699
email: atrc@bytelink.com.au

141 GILBA ROAD,
GIRRAWEEN, NSW 2145
web page: http://users.bytelink.com.au/atrc



DX & BAND REPORT

By Jim Smith, VK9NS
PO Box 90, Norfolk Island
South Pacific 2899

QSL INFORMATION

5B4AGN	Bob Henderson, PO Box 62155, CY-8061 Pagao, CYPRUS.
5B4AGW	Dez Watson, C.A.O., JSSU (AN), BFPO 59, CYPRUS.
9M6CT	Philip Weaver, PO Box 7, Bangkok 10506, THAILAND.
A92ZE	Gus Gostel, PSC 451, Box 1198, FPO AE 09834, USA.
DS4CNB	Dae Ryung Lee, Kwangsan PO Box 111, Kawangsan-gu, Kwangju, KOREA.
FR5FD	Patrick Lebeaume, 40 Rue Louis Desjardines, Bois de Nefles, F-97411 Saint Paul, REUNION ISLAND.
H44NC	Norried Chaisson, PO Box 168, Munda, Western Province, SOLOMON ISLANDS.
HR1RMG	Rene Mendoza Garay, PO Box 1000, San Pedro Sula, HONDURAS.
KA5HE	Ragnar Otterstad, PO Box 73, N-3825 Lunde I Telemark, NORWAY.
NP2S	Martha Golden, Kingshill PO Box 1276, Saint Croix, VI 00851, USA.
OD5NH	via Puzant,OD5NH, PO Box 80903, Beirut, LEBANON.
PA1AW	Alex van Hengel, 2991JK Barendrecht, THE NETHERLANDS.
SU1SK	Said Kamel, PO Box 62, Shabra Alkima, 13411, Cairo, EGYPT.
T77C	Tony Ceccoli, Via Carrare 67, Murata A-7, 47890, Rep. of San Marino, ITALY.
TI2CC	Carlos A Paez Pizarro, PO Box, 7370, San Jose 1000, COSTA RICA.
TK5EP	Patrick Egloff, PO Box 223, 20179 Ajaccio, FRANCE.
TR8CX	Xavier, BP 4776, Libreville, GABON.
VP2VE	PO Box 8309, Cruz Bay, St John's, VI 00831, US VIRGIN ISLANDS.
ZD2IB	Wilfred Guerro, PO Box 211, GIBRALTAR.
ZC4DW	Des Watson, C.A.O., JSSU (AN), BFPO 59, CYPRUS.
ZD8KW	John Clingham, PO Box 3, ASCENSION ISLAND, South Atlantic Ocean.
ZD9BV	Andy Repotto, TRISTAN DA CUNHA, South Atlantic Ocean.

It is now three years since Iris Colvin, W6QL passed away and ended an amazing period of DXpeditioning.

Iris and Lloyd Colvin, W6KG had, over a period of years, become a DXing institution as in their travels they activated some 200 separate DXCC countries. Lloyd, who passed away in 1993, was always good for a CW QSO and in my own case gave me several countries which were rarely active using CW.

In our own area of VK, ZL and the Pacific the Colvins were always attentive to the needs of DXers and usually via the 220 (222) Net or via the ANZA Net made sure that all had a chance at yet another rare one.

QSLing via the YASME Foundation or bureau always resulted in a QSL card and they meticulously filed 1000s of the received QSLs. The filing system was so extensive that the floor had to be strengthened to carry the weight!

The good news is that The YASME Foundation has decided to get the Colvin story into print and plans a full-length history of the foundation. A biography of its two most famous members will also be recorded.

This is a request to all who have any specific memories, photographs and so on to get in touch with Jim Cain, K1TN who has been charged with the mammoth task of writing the book.

The YASME Foundation continues as a not-for-profit corporation, organised to conduct scientific and educational projects related to amateur radio, including DXing and the introduction and promotion of amateur radio in under-developed countries.

As mentioned previously some 200 DXCC countries were activated by the Colvins and of course, Danny Weil, VP2VP was first in line for YASME but Martti, OH2BH and Dick, W0MLY (recently a silent key) also became part of the YASME story.

A full list of YASME Foundation activity can be found at *www.YASME.org* and for those with a story to tell or any input at all please contact Jim Cain at *YASMEbook@mybizz.net*.

Your input will be welcomed.

HAM RADIO FAIR 2001

Europe,s biggest ham radio event is scheduled this year for the weekend Friday June 29-Sunday July 1. This is a great amateur radio gathering held at Friedrichshafen each year with some 20,000 amateurs usually attending. There are a huge variety of interests including DX and contesting etc.

During my visit last year I was very impressed by the flea market and the wide range of amateur radio equipment, antennas etc which were available.

It is a very beautiful and scenic area and a major tourist spot.

Special Event Stations

Polish radio amateurs are planning to activate the special event callsign SN45KDU again November 1-18 by SP9KDU to celebrate the 45th anniversary of the radio club in Tarnowskie Gory, Poland.

QSL Route: SP9KDU, via the QSL bureau.

Multiple QSOs

I had a QSO with a VK7 the other day who asked me what could be done about stations working him every time he was active from a certain VK7 island for IOTA. He felt frustrated that with his modest Dxpedition-style station that others should be given a chance to make a QSO instead of those repeat QSOs.

By a strange coincidence a few days later I was in QSO with a well known /KH2 station and as we were talking about things in general the matter of multiple QSOs came up. He mentioned this same strong feeling of frustration as he waded through the same stations each time he got on this or that band. Like the VK7 he felt that other DXers should be given the chance of a QSO. Needless to say it was invariably the Big Guns who did the repeat QSO routine. It is highly unlikely that the guy with a 100W and a bit of wet string would be one of the usual culprits.

By another coincidence I was called by a well known PY7 station - I have worked this station dozens of times over the years and he calls me as a friend - "Hi Jim how is Kirsti", etc. In a previous QSO he mentioned needing VK9N on RTTY and I suggested we QSY to make this RTTY QSO.

I had just finished working the PY on the long path when a JA called me, and back I went to him. I then had more or less the following, "Hi Jim, its great to work you again on this mode, you always have a good signal", etc. I smiled to myself as it confirmed what I had said to the KH2 and the VK7.

Once you start worrying if the next station to call you will be one that has worked you before, then you are in for a hard time. The permutations are endless and there is no real answer to this problem short of pulling up every station and reminding him/her that this is the fifth time (or whatever) we have worked on this band and mode, etc.

In my view, it becomes a lesson in futility. It is one of the reasons why I never run a real-time computer log (except in contests of course) and just do not need the hassle of 'biting' over those endless duped QSOs.

There are many who have reasonably high profiles on the various bands and I guess we must just get on with that pile-up. They are usually never ending.

DXCC Challenge

It was announced in the ARRL DXCC Yearbook 2000 that Bob, W4DR had won the Desoto Cup as top of the DX Challenge on September 30. This is based on Country/Band totals and here is what you are up against if you have a mind to enter. The top 10 are listed here from a list of 25.

1.	W4DR	2383
2.	W1JR	2299
3.	K4PI	2215
4.	N4MM	2129
5.	SM6CVX	2081
6.	W1WAI	2076
7.	G4BWP	2068
8.	N6AR	2057
9.	N4CH	2029
10.	PA0TAU	2003

These are impressive totals by any standards.

CQ WPX

Then there are those who chase amateur radio call sign prefixes. I was surprised when I read some of the WPX prefix totals achieved and was delighted to note that Tarl, ZL3NS was up there with the top guns. I have long known that Tarl had a strong interest in prefix chasing.

Just to give you an inkling of these CQ WPX totals here are the top 10 on SSB and CW.

CW	**SSB**
9A2AA	4966
I0ZV	4333
W2FXA	4306
ZL3NS	3879
F2YT	4009
K6JG	3703
EA2IA	4004
I2PJA	3527
W1CU	3884
F6DZU	3513
UA3FT	3772
CT4NH	3194
N4NO	3748
N4MM	3124
N6JV	3715
EA2IA	3085
9A2NA	3667
OZ5EV	3027
VE3XN	3629
F2VX	3019

NB: T30JH is listed with 1411 prefixes. There are no VK stations listed - do any readers have a WPX total perhaps not claimed?

Incidentally, there is also a CQWW RTTY list and WA2HZR heads this with 4063 WPX prefixes. Mind boggling to say the least.

D68C QSL Cards

It is reported by Don, G3XTT that the D68C QSL cards, which are to be high quality and four-sided and will look good in everyone's QSL collection, are being printed in Germany. The D68C cards should arrive with Phil, G3SWH late May.

Phil expects to get into QSLing the D68C activity when he gets back home after his planned 8Q7WH trip to the Maldives scheduled for the June 4-11.

QSL Route:

NB SWL cards only go to:
Bob Treacher, BRS 32525,
93 Elibank Rd, Eltham, London SE9 1QJ, England.

Amateur radio in Zimbabwe

It is reported by Fred, Z21KJ, that amateur radio in Z2, Zimbabwe is alive and well with the Zimbabwe Amateur Radio Society in place and it has its own club station signing Z21PES.

The club has a strong core group and during the past two years has managed to enrol 21 new licensed radio amateurs. Congratulations.

US License Renewal

I was reminded recently that my Extra Class US license, WR1Z, was due for renewal. It was hard to believe that my 10 years was up! Where does the time go? The good news was that it could be renewed on Internet. However, I had a major problem in that the site needed a Social Security number or an ID Number so that it could proceed. This ID number thing was news to me and it took some time to find a fix.

I first telephoned FCC (be prepared for a long wait) but was finally given a number to call. It was then just matter of walking through a number of set questions and at the end of it all, I was given a nine-figure TIN identification. Armed with this number I then re-entered another part of the Website to register the number. Once that was out of the way it was back to the first Website which promised to action my renewal.

After filling out the form (including that TIN Number) on the Web page and allowing the group to charge me US$6.00, I may just have a renewed WR1Z license valid for a further 10 years.

I'll keep you informed, as it will take a couple of weeks to process.

However, the point is that it's quite amazing what one can do on Internet and gradually we are getting more and more experienced. Wish we could get rid of, or at least reduce that $4.50 an hour!

FALKLAND ISLANDS VP8

The recent DXpedition to VP8, Falkland Islands, by the GM DX Group made some 30,000 QSOs and QSLing will commence about the end of July.

QSL Route: VP8SDX
GM4FDM.

Bureau requests for QSLs can go via e-mail to tom@gm4fdm.co.uk

MARKET REEF OH0J

It is reported that a group of Finnish and Japanese amateur radio DXers and contesters are planning to activate OH0J, Market Reef, a DXCC entity between Finland and Sweden, during the IARU HF World Championship in July.

The team will have three complete stations and plan to be QRV on 6 through 160m with CW, SSB, RTTY and maybe SSTV. The group will be active July 12-16.

Operators include Seppo, OH1VR; Timo, OH1NX; Jaakko, OH1TX; Lasse, OH0RJ; Massy, JH1ARJ; Yo, JP1NWZ; Jun, OE1ZKC/JH4RHF; and Hiro, JR4PMX.

Before and after the IARU contest they will use OJ0/home call. During the contest they will be using OJ0U.

QSL Route: all /OH0J via their home call signs
QSLL Route: OH0U via JP1NWZ.

PITCAIRN ISLAND VP6

During a QSO with Dave VP6DB we had a quick discussion on the status situation of Ducie Island. The Pitcairners have made an official application to the IARU for membership. Dave thinks it will take about five months to complete the formalities and for a final vote by the IARU membership.

Once everything is in place, it seems there will be no problems with activating Ducie Island. (Dave has activated the island before, for IOTA) It now appears certain that VP6, Ducie Island (depending on that IARU vote) should be available as a new entity before the year is out.

It also seems that Kan, JA1BK will not be part of the team to activate Ducie but he has firm hands-on control of available transport, funding and logistics.

I will keep you informed as soon as there is any further update of the situation.

I have never doubted that Ducie Island would count as a new one when I first con-

tacted the RSGB (on behalf of Kan) back in December.

CONWAY REEF 3D2

I received my RTTY card from the recent 3D2CI DXpedition to Conway Reef. Enclosed was a short letter saying in effect just how tough it had been on Conway Reef during the DXpedition. It is a very inhospitable spot by all accounts.

The total number of QSOs was 29,703 and they worked all bands between 160m and 6m. (I didn't hear them at all on 6m) and the general QSO breakdown was 31% with NA, 29% with EU, 28% with JA and 12% with others.

Some 400 QSOs were made on RTTY and they were also active on Slow Scan TV with 180 QSOs, on PSK31 they made 140 QSOs. Sounds like a good broad brush DXpedition.

CHESTERFIELD REEF TX0

It is reported that the Oceania DX Group (ODXG) is planning a DXpedition to TX0, Chesterfield Reef later this year. Planning is well under way and the dates will be announced when the charter of the vessel is completed.

Plans are to be active on all bands 160m-6m on CW, SSB and RTTY and plans are to give as many of 'the needy' as possible to get a chance of a QSO. It is hoped to keep a minimum of five stations on the air at any time subject to propagation conditions. Contact Bill, VK4FW by e-mail *vk4fw@spiderweb.com.au* if you are interested in joining the group.

A medic is required for the team.

The recent TX0C operation went QRT on May 1.

INDIA VU

It is good to see that the VU2 radio amateurs have been recognised for their outstanding efforts in the area of public service. The recent activity was from Sagar Island during a major religious ceremony, held January 14 and 15 each year.

It is a ceremony in which millions of pilgrims participate - we had some TV news clips here at the time. The various VU stations did an outstanding job of assisting the West Bengali district administration during the festival. It is nice to see such assistance acknowledged and can only further the standing of the VU radio amateurs.

I recall writing a few comments on the superb work done during that horrific Orrissa cylcone episode a couple of years ago.

I know that several VU stations are trying hard to get authorisation for the activity from the Laccadives and Andaman.

I have concluded that these areas will not be activated by the efforts of foreign nationals. However, at one time I did have considerable hope that something could be done with a joint-venture approach. It is a very touchy subject to say the least.

DJIBOUTI J28

Stephane, J29VS is active on all HF bands from J28, Djbouti until the end of June next year. This will give many a chance at QSOs with this country on an ongoing basis.

QSL Route: J28VS
Sebastien Le Gall, F4DBF,
10 rue Roger Salengro,

BOUVET ISLAND 3Y

It was interesting to note that the Magnolia DX Association has presented Chuck Brady, N4BQW with a plaque to mark his great efforts signing 3Y0C on Bouvet Island recently.

As the group said, "We just wanted Chuck to know how much the DX community appreciated his one-man operation from Bouvet Island. Chuck endured many hardships and much improvising to allow many thousands of DXers worldwide to make a contact with this very rare DXCC entity. A hearty good job Chuck, from all the deserving."

My thoughts exactly and I am sure many VK and ZL stations feel the same way - a truly wonderful effort.

In a note from Mac, WA4FFW (manager for 3Y0C) he reports that the design of the card is almost complete and confirms that he now has the 3Y0C log. Mac expects that the 3Y0C QSLs will go out around September or October.

It would be a great pity not to be able to meet the end of September DXCC cut-off date for this year. Keep your fingers crossed.

AGALEGA 3B6

The recent HB DXpedition to 3B6, Agalega signing 3B6FR went QRT a few days earlier than planned due to the threat of bad weather in the area. Right now I have no breakdown of the number of QSOs made but should have it for next issue.

I will recap the reason why Agalega did not meet the DXCC criteria for becoming a new entity although the HB group did try very hard to make this happen. The basic problem is that Agalega does not meet the 'distance criteria' of being at least 800km from St Brandon, failing to meet this figure by a mere 38km - 'spitting distance!

The last operation from 3B7, St Brandon was just a couple of years ago when the HB-driven DXpedition signed 3B7RF and this of course cleared up a lot of demand for this 3B6/7 DXCC entity.

That's it for this issue. It was major disappointment not to make a QSO with the 3B6FR DXpedition on 160m. Again, there was a complete lack of attention to the VK/ZL areas at our sunrise times. They had a great signal on the very first day of operation, peaking to 579 at my sunrise!

In the past couple of weeks I have received many QSL cards for those wonderful 6m openings of April. Cards came from TI5BX, YS1RR, YS1AG, VK4FNQ, HP2CWB etc. There were some great QSOs and exciting moments. It now seems just possible that by next column the log periodic will have been brought down and hopefully, will be safely back up again.

I am willing to take a bet right now that on Sunday morning (a couple of days down the track as I write this) the beam will be on the ground. Once the beam is down a start can be made to a major repair and clean up job on the 11-element LPA monster.

It has served us well over the years but it looks a bit weary right now. It still functions for reasons that escape me.

Thanks are also due to those DX outlets which keep us all informed: QRZ DX, The 425 DX News, JA CQ Ham Radio, Radio Vista, Funk Amateur, The Daily DX, Les Nouvelles DX, etc. etc.

73 Jim, VK9NS

JARL'S 75th ANNIVERSARY

In June this year the JARL, will celebrate its 75th Anniversary with a determined move to try to boost falling membership. It seems the JARL, like many other societies, is experiencing a decline in the number if new radio amateurs - in fact a drop of some 8% in recent years.

Of course, the JA amateurs that we know as DXers are aware that DXing is alive and well. It is also well known that the JA amateurs are respected for their generally good behaviour in pile-ups and so on. We have all experienced the endless JA QSL cards sent via the QSL bureau but nevertheless it was an 'eye opener' to note that the JARL QSL bureau handles about a million QSL cards a month, each and every month! This is the quoted figure but given that there are more than 1.5m JA radio amateurs, it does seem to be a distinct possibility. A massive upgrade of JARL QSL bureau facilities last year (change of QTH etc) has resulted in a system capable of handling this amazing number of QSL cards.

However, the administration of the JARL is in touch with its radio amateurs and if you are a 160m enthusiast, you will know that recently the JA amateurs were given an additional window from 1.800 - 1.825 kHz.

This has opened up a completely new ball game for the JA low band enthusiast. Originally, they had only a tiny 5kHz allocation above 1.90 so this is a major plus. In conclusion, let us congratulate the JA radio amateurs and the JARL on this special anniversary and their considerable activity in our world of amateur radio in general.

NB Thanks to Bard, 7J4GWB for a very informative background article in QST.

ISLANDS ON THE AIR

By **Jim Smith**, VK9NS/MØBJI, Official Pacific IOTA checkpoint

I frequently comment on the growth of the RSGB IOTA program and with the recent issue of AF-090/Pr to 5R8GT operating from Sainte Marie Island off Madagascar it appears that the incredible milestone of 1,000 individual IOTA Numbers was reached.

This is an amazing total and shows the effort of many to get those un-numbered island activated - the programme is most certainly alive and well. In the recent IOTA release comments were made that, "the IOTA Honour Roll to be published shortly shows a number of the leading stations with scores above 950." To reach that level is perhaps one of the biggest performance challenges in HF DXing today, particularly for those who do not have a capability or interest in multi-band or LF band DXing.

A quick comparison of the Most Needed DXCC Entities list and the IOTA Most Wanted Island Group list shows an almost total lack of overlap. In fact hardly any of the island entities in the top 50 Most Needed Entities List features in the top 250 Most Wanted IOTA groups - most fall in the 250-500 category or lower still.

This would seem to confirm what we always suspected - that a disproportionately large percentage of IOTA members have very high DXCC scores on or near the DXCC Honour Roll. This is a subject well worth further research!' In a way I am not surprised at this observation, as to be successful in DXing the motivation, information, etc is precisely the same as what is needed in achieving a high IOTA total. In fact, exactly the same driving forces are needed in any form of competitive amateur radio.

Of course, this is not everyone's cup of tea - not everyone will reach those high IOTA totals of around 900-plus.

Having said that, even being slightly competitive, even being slightly aware of what is going on does give everyone the chance at 100 islands, 200 island and so on.

The real beauty of the IOTA Programme is that the island (group)-IOTA Number only needs to be worked once - no amount of multi-band, multi-mode QSOs will make any difference. You can work the island on CW, SSB or RTTY for example on whatever band suits you best. One other thing is that the island chasers are still a smaller group than those chasing DXCC, which also helps in reducing the pile-ups. There are not quite so many stations to work.

It will be interesting to see the RSGB IOTA Honour Roll Listing this year. I would hazard a guess that by next year a few of us in the area will be over that 900 figure. The following IOTA stations have been worked from here since the last column.

AF-001	3B6RF	Agalega Islands	QSL HB9AGH
AF-016	FR5HA	Reunion Island	QSL CBA
AF-047	CQ3E	Selvagens Island	QSL CT3HF
AF-083	3V8SM	Djerba Island	QSL DL1BDF
AS-015	9M2KT	Penang Island	QSL CBA
AS-083	UA0QMU/0	Vilkitsky Island	QSL UA4RC
AS-096	VU2PAI/P	St Mary Isles	QSL VU2PAI
AS-158	BA4DW/2	Dachangshan Island	QSL BA4DW
EU-049	SV8CYR	Samos Island	QSL CBA
EU-051	IE9/IZ8BZB	Ustica Island	QSL IZ8BZB
EU-060	SV2FPU/8	Spyros Island	QSL SV2FPU
EU-061	LA5UKA/P	Hvaler Island	QSL LA5UKA
EU-115	EI6FR	Ireland	QSL CBA
EU-129	SN0A	Udedom Island	QSL SP2QCR
EU-130	IV3SKB	Martinago Island	QSL CBA
EU-148	F5XX/P	Brescau Island	QSL F5XX
EU-172	OZ/DL1MZZ	Langeland Island	QSL DL1MZZ
EU-177	8S5T	Harstena Island	QSL DJ6JC
EU-178	ES1RA/8	Kihnu Island	QSL ES1RA
NA-066	N6UB/P	Santa Catalina Island	QSL N6UB
NA-104	V44KBC	St Kitts	QSL CBA/QRZ.Com
NA-107	FM5WD	Martinique	QSL CBA
OC-003	VK9CXW	Cocos (Keeling) Island	QSL G3SXW
OC-022	YC9BU	Bali Island	QSL CBA
OC-026	WH6ASW/KH2	Guam Island	QSL CBA
OC-038	ZL7IR	Chatham Island	QSL W8WC
OC-082	ZK1NDS	Penryn Atoll	QSL DL9NDS
OC-082	ZK1NFK	Penryn Atoll	QSL DL7NFK
OC-224	YE8XM/P	Tanimbar Island	QSL YC9BU
SA-002	VP8SDX	Falkland Island	QSL GM4FDX

IOTA CONTEST 2001

A reminder that the IOTA Contest takes place from 1200 UTC Saturday, July 28 to 1200 UTC Sunday July 29. As this contest attracts more than 1000 participants, it is quite possible to work the 100 different IOTAs required to qualify for the basic award during the 24 hours. Full details are at http://www.g4tsh.demon.co.uk/HFCC/index.htm

If you plan to take part as an island station, please check IOTA Directory 2000 to see that your island counts and that you have the right IOTA number. If it is not listed, it could be that its IOTA status has been withdrawn, so you may need to investigate.

Also remember, if you decide to activate an unnumbered, ie new, group, a new reference number will NOT be issued during the 24 hours of the contest, so you will need to start the operation before the contest to secure the number.

Please note that all correspondence about the contest rules, conduct, adjudication and results must be directed to the RSGB HF Contests Committee chairman, Justin Snow, G4TSH at hfcc.chairman@rsgb.org.uk and not to the IOTA committee or the IOTA manager. Notices of planned island activity should be addressed to Steve Lawman, GOUIH at g0uihsteve@compuserve.com if you want advance publicity.

AF-016 Bert, PA3GIO plans to be active from FR, Reunion Island signing FR/PA3GIO/P - planned dates are June.19-22.

OC-002 Bert, PA3GIO will sign VK9XY from Christmas Island with planned dates September 6-13.

OC-003 Bert, PA3GIO plans to be on Cocos (Keeling) signing VK9CQ September 14-20.

OC-004 Finally Bert will activate Lord Howe Island signing VK9LO October.9-15.

This last operation will conclude his planned PA3GIO DXpedition 2001. It should be noted that Bert would be active on 80-10m on SSB only with a very modest station and wire antennas.

QSL Route: All above activities PA3GIO - preferably via the QSL Bureau.

That's the IOTA column for this issue and there have been very good IOTA activities, especially from Europe since last issue.

It's good to hear the activity from Europe picking up as their weather improves. There has been quite a bit of tidying up to do to update EU IOTA numbers that were changed in the IOTA 2000 update.

Right now I have only a couple of replacements to be made and it is hoped that in coming months these few European islands will be activated, getting us all back to square one once again.

Compiled by Craig Seager, 12 Pellion Place, Bathurst NSW 2795

BBC DUMPS OZ, US

Mark Byford, the new director of BBC World Service has dropped a bombshell by announcing that the station will cease shortwave transmissions in English to Australia, New Zealand and North America from 1st July.

The news has been received with incredulity on both sides of the pond, not only at the erosion of what is undoubtedly one of the most popular services on shortwave, but also the highly questionable logic that has been used to arrive at the decision. BBCWS will now focus its delivery in English to these areas via FM rebroadcasting arrangements, in addition to satellite and Internet streaming, which it claims is in response to current listening habits.

Mr Byford says, "In the most developed markets, there has been a real revolution in the way people access the media. In these areas, and in response to the way people now listen to our services, we are making a transition from shortwave delivery to FM and Web delivery, as well as radio by satellite and cable and via mobile devices.

"The World Service in North America, Australia, New Zealand and the Pacific Islands will continue to be accessible via online and through our many re-broadcasting partnerships on FM and mediumwave.

"Our mix of international news, analysis and features is available on many local stations across North America, Australia and New Zealand and access to the World Service in audio is available via our Website.

"The savings we make by either ending or reducing our shortwave transmissions, releasing around half a million pounds a year, will then be re-invested in building our FM presence across the world and in our new Internet developments. Internet availability and usage is already high across North America, Australia and New Zealand.

"Among our target group of opinion formers and decision makers, in the developed world, it represents a key way of accessing us rather than through shortwave."

The reference to *"opinion formers and decision makers"* is certainly the declaration of a new direction at the BBC. Generally regarded as a public service broadcaster, and source of impartial news blended with quality entertainment, it appears that the station now only seeks to reach the influential people in society, which presumably excludes the socially and economically disadvantaged.

Any presumption that current listeners on shortwave can access the BBC as readily via FM and the Internet is also flawed. Continuous BBC relays by community stations, the ABC and the Print Handicapped (RPH) network are primarily restricted to overnight, when one would expect most listeners to be immersed in the land of nod. Of course, many regional areas don't have access to such relays at any time.

The day may well arrive when Internet audio is a viable alternative to radio, but I wonder how many people are actually listening to international stations for long periods via this method at present.

The lack of saturation and high cost of ADSL and Cable Net connections means that most of us need to endure constant 'rebuffering' messages from our RealPlayer or equivalent streaming software, often via low-quality dial-up ISP connections.

The portability afforded by shortwave radio is also sacrificed.

The cynical might suggest that this is all about money, shifting the cost of service from the broadcaster to the listener. Those BBC listeners with expensive satellite receiving gear, second phone lines and appropriate subscriptions will be catered for to some degree, with the rest largely cut adrift or forced to listen to broadcasts beamed to other parts of the world. Such reception is considered opportunistic, at best.

Mark Gardiner, head of media relations at World Service, suggests that in Australia, listening to shortwave has dropped by two-thirds over the past eight years, as listeners migrate to FM rebroadcasts on the ABC. Certainly, availability of The World Today at noon on Radio National, and other short-span excerpts will have reached a wider general audience than shortwave, but it represents only a small selection of the BBC's quality output.

It is moot point whether any of this listenership has migrated totally from shortwave. The BBC points out that it continues to invest in shortwave infrastructure to service listeners in areas such as the Persian Gulf and South Asia, and is not retreating from this mode of broadcasting in a general sense.

People in Australia and New Zealand, as an alternative to direct broadcasts, might like to sample the secondary coverage provided by frequencies beamed to South-East Asia, such as 11,955, 15,360 and 9740kHz.

RA TURNS UP VOLUME

Radio Australia's Asian coverage has received a shot in the arm with the resumption of transmissions via Cox Peninsular, near Darwin.

Programs in English and Indonesian are going out via the facility by virtue of a funding package of $2.8m a year, provided last August by the Federal Government to enhance RA's broadcasts to Asia. Part of these funds has been used to purchase airtime on the Cox Peninsula facility, which is now owned by Christian Vision Australia.

Jean-Gabriel Manguy, head of Radio Australia says,."The new broadcasts from the Darwin transmitters mean listeners in the region will now be able to hear us more clearly and for longer.

"With the new Darwin transmission, we will be delivering an additional seven hours of programming each day to listeners throughout the region. This will enable Radio Australia to provide a stronger Australian voice in Asia, with

many listeners now able to tune-in for up to 20 hours a day."

Donald McDonald, chairman of the Australian Broadcasting Corporation, says the new Darwin broadcasts will significantly boost the service that Radio Australia provides to Asian audiences.

"Since the beginning of this year, Radio Australia has been working to enhance its service to audiences in Asia. We are now broadcasting to the region via transmission sites in Singapore, Taiwan and the northern Pacific, and the Darwin site completes this important jigsaw puzzle," says McDonald.

There have been a few frequency movements since the new relays commenced, but as at the time of writing the broadcasts appear to have settled into this pattern:

2130-2330z	9865kHz	Indonesian	Central & West Indonesia
2200-0000z	13,625kHz	English	Southeast Asia
0000-0030z	21,680kHz	Indonesian	Central & West Indonesia
0000-0130z	17,775kHz	English	Southeast Asia
0400-0430z	21,680kHz	Indonesian	Central & West Indonesia
0500-0530z	21,680kHz	Indonesian	Central & West Indonesia

Tests from the Darwin transmitters utilising Christian Voice's own programming appear to have been pre-empted in favour of the above, at least for the moment.

SERBIA RETURNS

Radio Yugoslavia is back on shortwave, after an agreement was struck for the re-use of the high-powered transmitting facility located at Bijeljina in Bosnia. The Belgrade-based RY was forced to cease broadcasts from Bijeljina some 10 months ago after pressure was applied by the West on the Bosnian authorities.

English broadcasts from Radio Yugoslavia are now scheduled:

0000-0030z	11,870kHz	North America (Not Sundays)
0430-0500z	11,870kHz	North America
1830-1900z	6100kHz	Europe
2100-2130z	6100kHz	Europe
2200-2230z	7230kHz	Australia (Not Saturdays)

Other languages for the Australia and Asia region:

2130-2200z	7230kHz	Serbian (to 2230z Saturdays)
2230-2300z	9685kHz	Chinese

Radio Yugoslavia broadcasts in 13 languages (English, French, German, Russian, Spanish, Arabic, Albanian, Greek, Bulgarian, Hungarian, Italian, Chinese and Serbian) and has been on air in some form since 1936. During World War II, transmissions went out from studios and transmitters in Russian under the name "Free Yugoslavia."

Relatively low-powered equipment (10kW) was in use until the Stubline site came on stream in 1951 with 100kW and was the main facility until the complex at Bijeljina was constructed in 1987, with four 500kW units. Two of these were moved to Stubline during 1992, only to be destroyed by NATO bombing in 1999, along with other broadcasting infrastructure.

The above schedule, of course, shows only one transmitter in use at any given time - indicating that a second is in disrepair or used for redundancy purposes only.

NEW STATION OUT OF BELGIUM

"Radio Ezra" is the name of a new Gospel station using the transmitting site at Wavre, primarily used by Belgium's RVI and RTBF (Flemish and French language networks, respectively). The many Biblical scholars among R&C's readership (!) will be aware that Ezra is a book of the Old Testament, taken from the name of a scribe well-versed in the law handed down by Moses.

Operated by an organisation called Water into Wine Ministry, Radio Ezra claims to be interdenominational and broadcasts on Sundays only from 1100-1115z on 13,850kHz, beamed to Europe, North Africa, the Middle East and North America in English. According to John D. Hill, the apparent mover and shaker behind the new station, his message "like Ezra's, is to rebuild the spiritual condition of the people of God. To call the lost sheep of Spiritual Israel out of the false, pagan amalgamating church world and back onto the narrow road that leads to eternal life."

NEW LANGUAGES FOR AFRICA

According to the latest edition of Current magazine, Adventist World Radio is now broadcasting to semi-nomadic groups in Africa, using their own languages. These include the Afar, Fufulde and Maasai. The Afar live in Djibouti, Somalia and Ethiopia, and are mostly semi-nomadic herdsmen. Additionally, programs in Fufulde (also known as Fulani) are being prepared in studios in Yaounde, Cameroon. This language is spoken widely in Cameroon, Nigeria and Senegal. The Maasai people live mostly in Kenya and Tanzania, and transmissions intended for this group will go on air from October.

ROMANIA

Radio Romania International now had this schedule for English broadcasts:

0200-0300z	11,940, 15,340kHz	Northern America
0200-0300z	15,105, 17,735kHz	Japan
0200-0300z	15,180, 17,790kHz	New Zealand
0400-0500z	11,940, 15,365kHz	North America
0400-0500z	17,735, 21,480kHz	India
0600-0700z	11,940, 15,180kHz	North America
0641-0656z	11,775, 15,365kHz	Western Europe
0700-0800z	17,735kHz	Northeast Africa
1400-1500z	15,250, 17,735kHz	Western Europe
1700-1800z	15,380, 17,805kHz	Western Europe
1700-1800z	11,740, 15,365kHz	Northern Europe
2100-2200z	11,940, 15,365kHz	Western Europe
2100-2200z	9,725, 11,740kHz	Northern Europe
2300-0000z	9,750, 11,775kHz	Western Europe
2300-0000z	11,940, 15,105kHz	North America

The first shortwave transmissions from Romania commenced on January 1, 1940, broadcasting one-hour programs in French, German, Italian and English. By 1947 there were 1000 hours of broadcasts in five languages, and in 1957 there were 6600 hours of broadcast in 11 languages.

For the duration of Communist rule, an extensive schedule was in operation and the cupboard in my radio room still has piles of (unsolicited) literature, of a political and cultural nature, that the then Radio Bucharest used to send out in response to reception reports and QSL requests.

The station changed its name to Radio Romania International in 1989.

MORE ITALIAN HAPPENINGS

It seems that Vatican Radio is not the only broadcaster to run afoul of the Italian authorities over health concerns. According to a report on VOA's Communications World, the Court of Naples (Tribunale di Napoli) has ordered American Forces Network (AFN) Europe to cease broadcasting from its AFN Naples radio transmission site. Two FM outlets were serving about 9,000 US forces stationed in the region. An AFN press release claims, "At the time of the shutdown, AFN Naples was operating within authorised transmitter output power limits (each transmitter at 5kW) and in accordance with Italian government laws and regulations".

The decision is being appealed by AFN, and the case is to be heard by the Italian Supreme Court.

Construction of Adventist World Radio's new station at Argenta (also in Italy) appears to have come to a standstill as well for what AWR describes as "legal and environmental" reasons, which one might safely assume relate to potential compliance issues. Meanwhile, back at the Vatican, it appears that the Pope's radio has finally reached some sort of agreement with the Italian authorities. Communications World reports that the mediumwave transmitters at the Santa Maria di Galeria complex are to be moved to an alternate location by the end of August, possibly even right out of Italy. The output power of the shortwave transmitters has already been lowered, and the station has undertaken not to use antennas near the boundaries of the site. It will indeed be interesting to see whether the newly elected Italian leadership pursues these and similar matters with the same vigour.

Concern about electromagnetic radiation from broadcast transmitters is not restricted to Italy either. Radio Liberty/Radio Free Europe shut down its 1593kHz 150kW mediumwave transmitter at Holzkirchen in Germany during April, in response to concerns expressed by the populace of a nearby village. Inexplicably, the much higher-powered shortwave transmitters at the same complex continue to operate.

DX CAMP A SUCCESS

During May the Australian Radio DX Club held its annual listening camp at Cataract Dam, south of Sydney, with a good selection of members making the trek for a weekend of serious Dxing and social interaction.

Despite freezing conditions and an afternoon thunderstorm interlude, some useful observations were made by attendees using a variety of equipment and a virtual maze of antennas erected especially for the occasion.

A particular highlight was several special broadcasts from pirate broadcasters including Radio Alfa Lima (15,070kHz), Radio Cochiguaz (11,440kHz), Radio Blandengue (14,566kHz) and Radio Black Arrow (15,806kHz), all of which were heard at varying strengths.

Early morning reception of the Argentine Antarctic station, LRA36, on 15,476kHz was also enjoyed, along with an uncommon quantity of morning Brazilian signals on 49, 31 and 25m.

Now in its 37th year, the ARDXC remains Australia's premier group for shortwave, mediumwave and FM enthusiasts, enjoying steadily rising membership in recent years through friendly promotion of the hobby and the continued publication of its monthly Australian DX News.

The ADXN is now offered in Adobe Acrobat (PDF) format at discount membership rates, as an alternative to the usual hard copy. Sample (paper) copies may be obtained for $5 from the secretary at 4/33 Kerrie St., Peakhurst NSW 2210

HERE & THERE

• **Radio Thailand's** home service channel of 4830kHz has recently been carrying English language programming, best heard here from 1130z fade-in until past 1300z. This 60 metre band frequency has traditionally carried the Thai service, in parallel with 6070 and 7115kHz, and the English content is thought to be targeted at tourists or English-speaking residents. The external service of Radio Thailand has popped up on 21,795kHz from 0530-0600z, and although beamed towards Europe, is giving good coverage here.

• **Radio Studio Nevskaya Volna** is another Russian local service relayed on shortwave, and can now be heard on 7370kHz, replacing 6235kHz from 1800-2030z. Programming is in Russian, though there are occasional English identification announcements. The transmitter is in St Petersburg.

• **Radio Border Hunter International** is a European pirate making it to our shores on a regular basis of late. Claiming to transmit from Belgium, the station gets out very well on 15,794.75kHz LSB, and is heard at various times including the period from 0600-0700z on weekends.

• **Radio Congo** in Brazzaville has been frequency hopping of late, abandoning usage of established 5985kHz, a frequency also shared by Radio Tanzania in our morning period. Congo's latest channel is 4765kHz, which was previously used some years ago, reported by John Schache (Bathurst) with strong signals from 2030 until past 2200z. I would expect that reception should be possible in most parts of Australia until listed sign-off 2300, and for eastern states listeners again from 0500-0630z via the long route over the Pacific. An alternative frequency, also used in recent weeks, is 9610kHz. Most programming is in French, but English and Spanish news bulletins have been recently reported as well.

• **Chris Hambly** (Melbourne) advises that the ABC's transmitter at Alice Springs has reverted to its usual nighttime channel of 2310kHz, after some weeks using (daytime) 4835kHz around the clock due to a switching problem. The 120m-band channel is available from 0830-2130z.

• **Ian Baxter** reports to "Australian DX News" his reception of the American Forces Network from Sigonella, Sicily on the unusual frequency of 4995kHz USB. Reception was from 2140z until fade out some time after 2200z. Sigonella is one of a number of sites being used for terrestrial transmissions by AFN to US servicemen abroad, pending the commissioning of a new satellite-based delivery system. Other outlets include: Sigonella 10,942.5kHz, Diego Garcia 4319/12,579kHz, Pearl Harbour 6350/10,320kHz, Guam 5765/13,362kHz, Key West FL 4278.5/12,689.5kHz, Puerto Rico 6458.5kHz (All USB).

• **Clandestine station National Radio** of the Saharan Arab Democratic Republic continues to be heard in our late afternoon period, alternating between 7357 and 7470kHz. Arabic language programming is observed until 0700z sign-off, with a national anthem.

• **Voice of Nigeria** seems to have re-timed some of its broadcasts on 7255kHz, and is noted with very strong signals in English from 2200-2300z (formerly in Hausa at this time). Other frequencies announced at sign-off are 11,770 and 15,120kHz, neither of which has been used in recent times.

* **Radio Tadjikstan** is one of the more obscure external services from the former Soviet republics, but is currently well heard with an English broadcast from 1645-1700z on 7245kHz. This transmission is inconveniently timed for most of us, and unfortunately, the audio quality is somewhat lacking as well.

The Solar Indices: can we count on the figures?

I often chuckle to myself when I hear voices frantically asking for the "figures" each day before the ANZA net opens on 15 and 20 meters in the Pacific.

How much do we, as radio amateurs, rely and depend on the daily solar figures transmitted at 45 minutes past each hour by WWVH? I often chuckle to myself when I hear voices frantically asking for the "figures" each day before the ANZA net opens on 15 and 20 meters in the Pacific. These solar figures may hold some testimony for HF operators, but do they in fact deliver when it comes to the more difficult DX band of six metres?

Jack Haden VK2GJH

The following viewpoint on the daily WWV/WWVH solar figures is an extract from a paper published by Shel NI6E/KH6 (a knowledgeable 50MHz DXer) on the UK Six-Meter Group web site, it makes for some very interesting reading. The article concerns the WWV daily indices in relation to six metre F2 propagation and was printed in the April 1991 issue of Six News. Old though the "paper" may be, it is still very much current for amateur purposes.

Now over to Shel:

A VIEW FROM NI6E/KH6

I enjoyed the item by GJ4ICD in the December 1990 issue of the KA3B Six Metre Report, and I certainly agree that the panic to obtain the latest WWV solar figures is unwarranted, and in fact causes undue interference and clutter on 28.885MHz. Regular participants on that frequency have already heard me state some of the following, but it seems most worthwhile to publish these comments once and for all.

Geoff GJ4ICD is most correct in that anyone who takes the time daily to graph the 2800MHz solar flux as a function of any aspect of F2 propagation on 50MHz soon realises that that these variables are generally not correlated. It has become a source of amusement when naÔve 50MHz operators are overheard to say, "Wow, the flux is over 200, so why don't we have any openings?" or the converse "But the flux is only 140, how come the band is wide open today?"

INVERSELY PROPORTIONAL TO THE DAILY SOLAR FLUX

Being one of those privileged to monitor 28.885 for many hours each day, I can't help but notice that the number of people reporting new countries being worked on 50MHz, often appears to be inversely proportional to the daily solar flux, quite the opposite of what we have been led to expect. The cult has become so pervasive that, in a triumph of lily-gilding (where the lily is made out of hole cloth), one manufacturer of amateur equipment is now marketing an expensive transceiver that incorporates a digital clock that chimes at 16 past each hour (44 past for WWVH) to warn the user to check the upcoming WWV solar report!

VISUAL SUNSPOT OBSERVATION

The whole concept is reminiscent of numerology or astrology or any number of other pseudo-sciences, in which the adherents are so boggled by the true complexity of nature that they embrace anything that, appears to offer simplicity. To see how this situation arose, we need to step back a couple of decades. In several landmark articles in QST starting with the DXers Crystal Ball Series, Ed Tilton W1HDQ, explored the possibility of predicting F-region propagation by means of methods available to radio amateurs. Initially, this concentrated on visual sunspot observation. While sunspot activity is very interesting from an astronomical perspective, it soon became apparent that radio amateurs, by and large, were not motivated to invest in the needed optics and take the time to make daily sunspot observations.

This is unfortunate for astronomy because the AAVSO American Sunspot Number Program is one of the few ongoing projects in which amateurs are making a significant contribution to the field. Anyway, Ed soon decided that since the 2800MHz Ottawa solar flux forecast is broadcast daily on WWV and WWVH and thus accessible by anyone with a short wave receiver, it might make a good substitute for the SSN. After all,

Today's Propagation Forecast

Solar Activity Forecast: Solar activity is expected to be at low to moderate levels. Regions 9455 and 9454 appear capable of isolated M-class flare activity.

Geophysical Activity Forecast: Geomagnetic field activity is expected to be at quiet to active levels. The greater than 2 MeV electron flux is expected to reach high levels during the first half of the period.

Here is the latest 3-day Solar-Geophysical Forecast

http://www.sel.noaa.gov/forecast.html.

Perhaps the most useful propagation page for Amateur Radio Operators can be found at *http://dx.qsl.net/propagation/*

The sunspot number for May 14, 2001 was 149.

anyone who examines a long-term smoothed graph of SSN verses flux can't help but notice that they track closely, and furthermore they both peak around the years when the F-region MUFs are at a maximum (e.g.: 1958). Graphs and formulae were then published showing the mathematical relationship between the SSN and smoothed flux, and these reasonably accurate although not exact. DXers who had copies of the old CRPL books showing smoothed global F2 MUF distributions as a function of smoothed SSN could now use flux information as it appeared, for predictions.

WIDESPREAD BELIEF IN THE MAGIC FLUX LEVEL

With the advent of personal computers, software was written based on the CRPL database and this software was welcomed with open arms because it was so convenient. Some writers proceeded to publish tables showing that for each historical sunspot maximum, the beginning and end of widespread F2 openings at 50MHz coincided with a particular level of smoothed SSN and flux, and this lead to the widespread belief in the magic flux level of 200 for 50MHz DX!

All of these developments were logical and properly rooted in scientific fact. But obviously something is wrong because, as noted above, the obsessive checking of the daily WWV/WWVH flux number has failed to produce any improvement in our prediction ability. What happened is that somewhere along the way (actually, many writers seem to have independently made the same fatal error), the critical adjective "smoothed" was omitted. This concept of smoothing means that the data are arranged over a 13 month period centred on the data in question, which unfortunately means the smoothed numbers are not available until 6.5 months later. Closer inspection of the data archives reveals that, while the smoothed variables do track closely, the (unsmoothed) daily variables do not.

ON A SHORT-TERM BASIS

When looked at on a daily or other short-term basis, the flux diverges wildly from the SSN and both of them diverge from the levels of F-region ionisation. The CRPL database was never intended to be used with daily SSN, and its accuracy when used that way is so poor as to render it almost useless. The same applies to all PC prediction software, and to the 200-flux "magic number". The reason why daily 2800MHz flux and SSN fail to predict daily ionisation is that those two wavelengths of solar radiation are spectrally far away from the wavelengths that actually excite the ionosphere. The flux wavelength is about 0.1 metre; while the sunspot number is observed in the visual spectrum around 0.7 micrometre; while the F-region is primarily ionised by ultra violet radiation around 0.03 micrometre.

Note that these wavelengths differ by orders of magnitude. Since the spectral distribution of solar output varies tremendously (and unpredictable) with time, it is quite possible for the radio flux or SSN to be constant while the UV fluctuates, or vice versa.

UNFORTUNATELY

Unfortunately, for amateur observers, the Earth's atmosphere is totally opaque in the short UV range, so measurements of such radiation can only be made above the atmosphere. Satellite UV data are available at NOAA SEL, so perhaps they could be petitioned to make such available on WWV, and while they are at it, they could start giving us more data on the intensity of flares. The disappearance of filaments, and coronal hole activity (since this article was published a lot of the information mentioned is now freely available on various web sites etc...Jack). Meanwhile, the NOAA SEL BBS at 303-497-5000 (see QST Nov 1990 p.41) does include some items that should be more useful, at least, than the WWV flux. The X-ray background level and the proton fluence are both listed under option A, sub item E "daily indices". Anyone with a modem who connects to the BBS could do us all a favour by relaying those items on 28.885. It would be wonderful if someone in the Denver/Boulder area could make such calls on a daily basis, since it would be a local call from that area. The WWV flux may not be totally useless.

Unfortunately, for amateur observers, the Earth's atmosphere is totally opaque in the short UV range, so measurements of such radiation can only be made above the atmosphere.

THE IDEA HAS BEEN PERPETUATED

Several six-metre DXers have observed that MUFs tend to be elevated, beginning roughly three days after the flux peaks, and ending roughly when the flux bottoms out, in its 27-day periodicity. So it is the trend of the flux, rather than its actual value, that seems at least a little bit useful. Another item mentioned on WWV is the "solar activity for the last 24 hours", which is based on X-ray influence, although it's given on a very coarse five point scale from very low to very high. I believe that the x-ray activity has more in common with the short UV than the radio flux does, so that little item may actually be the most useful in the whole WWV report. Certainly the WWV predictions for the "next 24 hours" for both solar and geomagnetic activity are nothing but crude guesses and rarely proves accurate if those variables do anything but hold still. As for the magnetic indices, again there seems to be an ill-founded belief that "the quieter, the better" as Geoff pointed out. This appears to have begun in CQ Magazine by a writer, who shall remain nameless, in which formulae and graphs were published proclaiming such a relationship. And again, the idea has been perpetuated in recent propagation software.

INTERMEDIATE A AND K INDICES MAY BE BEST

It is clear that, at 50MHz at least; prolonged periods of geomagnetic quiet actually appear to suppress the F2 MUF. A fact, which I believe, was at least partly responsible for the very poor conditions in November 1990. The one exception seems to be the transpolar paths, where anything but extreme quiet appears preclude F2 propagation. On the other hand, a really major geomagnetic storm with A-indices exceeding say 80 or 100, also suppresses normal F2 (for example, the storm of March 1989), but when such a storm is subsiding, there can be spectacular F2 opening worldwide. So it appears that intermediate A and K indices may be the best. But even so, two dates with identical indices can differ dramatically; perhaps the afore mentioned proton influence data on SEL-BBS can help sort this out.

BE AWARE

Finally, those attempting analysis of past events should be aware that the WWV numbers are preliminary. The final data is published in the monthly Solar-Geophysical data, and reprinted in the Journal of Geophysical Research, section A, available in many university libraries, and also of course, they are archived in Boulder and at other World Data Centres (IPS website in Australia??). Certainly the 1800z Boulder A-index so favoured by the cultists should never be used for serious analysis, because, as stated by WWV, that is a preliminary number encompassing only an 18 hour period, and is usually changed at 0000z to a semi-final value.

Likewise, all the magnetic indices on WWV are Boulder Colorado numbers, and

should be supplanted by the final planetary indices as given in SGD and JGR. Anyone using the formulae for conversion of flux to SSN or vice versa should keep in mind that such formulae are crude empirical approximations of a relationship which is not a simple function, so please leave off the decimals. For use with prediction software, the best numbers are the predicted smoothed month sunspot numbers issued by A. Koeckelenburgh of the sunspot index centre in Brussels, Belgium. These are published in Sky & Telescope every month and tend to be quite accurate.

THE MOST POWERFUL PREDICTOR

The most powerful predictor at this point seems to be the actual 50MHz F2 propagation events are most likely to recur at 27-day intervals. This has, of course, been known for several decades. I have found it to be surprisingly useful during Cycle-22. Geoff raised several other points. On the matter of backscatter, or more accurately side scatter, I get lots of it at my geomagnetic dip latitude, and it always fits a certain pattern. Signals are weak and diffuse, whether the distances are short or long (such as ZC4 to KH6 and 6W1 to KH6), and the poorly equipped stations along with those who insist on using SSB are never heard. The stations at both ends generally do have strong reception to the intermediate point to which the antennas are pointed if there is any activity there (South America in the two cases cited above).

These are the hallmarks of scatter. By great contrast, the true long path openings I've witnessed (and have described) show strong, clear signals, even from the small stations, and the antenna bearings never deviate noticeably from the great-circle long path azimuth. Added to all of this, I cannot imagine any mechanism which might account for strong bent signal paths, so it's not surprising that they don't seem to exist, at least not at these frequencies.

The most powerful predictor at this point seems to be the actual 50MHz F2 propagation events are most likely to recur at 27-day intervals. This has, of course, been known for several decades. I have found it to be surprisingly useful during Cycle-22.

NOT GOING TO TOUCH THAT ONE

On the matter of widespread sporadic-E, I am not going to touch that one! But it reminds me that, many times in this sunspot maximum, there have been sudden almost global onsets of 50MHz F2, simultaneously (eg: within a five minute period), and almost as suddenly, the band dies, everywhere simultaneously. Apparently the cause must be some burst of UV from the sun which briefly enhances MUF over the entire sunward hemisphere. And does 28.885 ever get clogged up on those occasions?

IN CONCLUSION

Well, there we are, Shel has certainly covered some ground and addressed a number of myths and misconceptions that many have about the daily WWV solar indices. As they say, each and everyone is entitled to a viewpoint, and Shel has expressed his as I know some people out there will beg to differ.

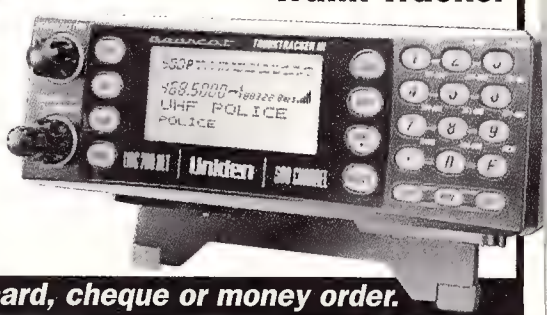
G. & C. COMMUNICATIONS

Authorised dealer for: Kenwood • Barrett RFDS • GME Electrophone • Uniden • RF Industries • Altronics

It's been a long wait but these revolutionary new radios are now here ...

... and the prices are right!

▼ 780 XLT Trunk Tracker



▲ UH090 UHF & AM in one

◀TS-2000

Australia-wide mail orders welcome. Payment by credit card, cheque or money order.

19 Arleon Crescent Cranbourne 3977
Ph 03 5996 3298 Fax 03 5995 0184

Email: gccomm@netspace.net.au
www.netspace.net.au/~gccomm

Making sense of the indices

Increased sunspots correlate with better radio propagation around the world, especially when the 11-year solar cycle peak arrives. Bands like 28MHz and 50MHz become very exciting as 28MHz, being at the top of the HF spectrum, propagate very efficiently when the sunspot count is high.

We must not forget the seasonal variations, with six and 10 at their prime in our summer and also in the spring. The sunspot numbers number varies from near zero during the solar minimum to over 200. Solar flux is another value of importance to the DXer and is measured at The Dominion Radio Astrophysical Observatory, British Columbia, on 2800MHz (10.7cm) 1900z daily. They operate an antenna pointed at the sun linked to a receiver tuned to 2.8GHz, radio noise from the sun is measured and seems to correlate somewhat with sunspots and with the density of the ionosphere.

The 2800MHz flux correlates intensity of ionizing UV and X-ray radiation and provides a convenient alternative to sunspot numbers. It usually varies on a scale from 60-300. WWV broadcasts the solar flux numbers at 18 minutes past the hour and WWVH at 45 minutes past the hour.

RISING MUF

High flux values generally result in higher MUF's (Maximum Useable Frequencies), but the actual procedures for determining the MUF at any given time and path are very complicated. Solar flux is not the sole determinant, as the angle of the sun to the Earth, season, time of day, exact location of the radio path, and other factors must be all taken into consideration.

As the frequency is raised above the critical frequency, the ionosphere bends radio waves at increasingly larger angles. At some MUF refraction is just sufficient to bring the radio wave back to Earth at some distant point. The distance travelled by a wave launched obliquely into the ionosphere depends on the frequency, the elevation angle and on the intensity and height of the ionized layer encountered at midpoint of the propagation path.

The one-hop distance is usually longest at the MUF. The maximum is about 2300 km for the E layer and 4000 km for the F2 layer. Radio signals above the MUF are still refracted, but at angles that normally send them uselessly into space. So now we know why it's most important to track a rising MUF, especially for 50MHz DXing, by monitoring out-of-band indicators etc.

Ionospheric density varies considerably, so both the critical and maximum usable frequencies are not constant. Nevertheless, the ratio between these two values, known as the Maximum Useable Frequency Factor (MUFF), is a constant for each layer.

Since the charged ions in the atmosphere are negative, a blast of protons (electromagnetic radiation) from the sun can neutralise that charge and make the ionosphere less refractive. These waves of protons can be so intense that they may trigger a geomagnetic storm, resulting in short term blackout of all HF communications on the sun facing side of the earth.

SOLAR FLARES

Solar flares and coronal holes, which emit protons, are also of interest to radio amateurs. Since the charged ions in the atmosphere are negative, a blast of protons (electromagnetic radiation) from the sun can neutralise that charge and make the ionosphere less refractive. These waves of protons can be so intense that they may trigger a geomagnetic storm, resulting in short term blackout of all HF communications on the sun facing side of the earth. In extreme cases, nearly all background noise will be gone as well.

In addition, energy from a solar flare may energise the D Layer of the ionosphere, which absorbs radio waves. Radio emissions from solar flares may be heard as sudden increases in noise on the VHF bands. The number of geomagnetic storms varies considerably from year to year, with peak geomagnetic activity following the peak of solar activity.

THE 'K' & 'A' INDEX

Devices known as magnetometers monitor geomagnetic activity. A worldwide network of magnetometers monitors the Earth's geomagnetic field, because magnetic activity varies with latitude. Small variations in the geomagnetic field are scaled to two measures known as the K and A indices. The planetary A index relates to geomagnetic stability. The K index provides an indication of magnetic activity during the previous three hours on a finite scale of 0-9. A one-point change in the K index is quite significant. K index readings below 3 generally mean stable conditions, and above 3 can mean high absorption of radio waves. Each point change reflects a big change in conditions.

Very quiet conditions are reported as 0 or 1, while geomagnetic storm levels begin at 4. Daily geomagnetic conditions are summarised in an open-ended A index that corresponds to daily K index values. So a full day with the K index at 3 will produce an A index of 15, a K index of 4 means an A index of 27, K index of 5 means an A index of 48, and a K index of 6 means an A index of 80. These values are updated every three hours and broadcast over WWV and WWVH, mentioned earlier.

The figures reported on WWV and WWVH are the Boulder K and A index, measured in Boulder, Colorado. Generally the higher latitude of the measuring station, the higher the K and A indices reported. The reason being, the effects of geomagnetic instability tend to concentrate toward the Polar Regions of the globe.

So, a quick look at understanding the solar figures without too much esoteric detail. As I mentioned, there are many puzzling questions about the accuracy and reliability of the indices and how the figures come about. Any radio amateur active on 50MHz can attest as to how unpredictable the band can be despite what the figures are for any given day.

Still interested? Then have a look at the following web sites http://www.ngdc.noaa.gov/stp/GEOMAG/kp_ap.html for more details on the A and K index. On the earth's magnetosphere go to http://science.nasa.gov/ssl/pad/sppb/edu/magnetosphere/bullets.html for more information. Special thanks go to the Geophysical Section at WWV Fort Collins in Colorado USA, the ARRL Handbook and K7VVV. ***73 de Jack VK2GJH***

Getting to know your new

UBC 780 XLT

Some hints and tips from Greg Towells, VK3GJT via Dave, VK3GZ

Before starting I must acknowledge that most of this information was sourced from Dave vk2gz and his wonderful website Spectrums Edge. If you are into scanning, your first stop should be there, at: http://www.webtel.net.au/~maggnum/

Anyhow, on with it. The new BC780xlt trunk tracker Mk3 has arrived on our shores and is probably one of the best scanning receivers ever on the Australian market. The 780xlt is a full features radio, and uses a menu driven system for programming and accessing the radios features, not unlike some Nokia mobile phones. It actually isn't to hard to drive, given it has a well laid out menu system for programming the scanners features. Please read the manual! This is most important, as most scanning faults and mistakes with this radio seem to be from peoples lack of manual reading. There have been a few mistakes in the US manual, but these are being corrected in the Australian manual, as well as some rewording of the trunk programming to make it easier to understand.

PROGRAMMING THE 780XLT FOR GRN SITES

Now that you have your radio, you'd be anxious to get it to do what you bought it for - tracking that trunking!! So here are simplified instructions for programming 780xlt for GRN sites.

These are the basic parameters for the NSW GRN trunk sites.

- Base 1 = 408.8125
- Offset = 380
- Step = 12.5kHz
- Base 2 = 415.5750 (note this is the common base for the GRN & is used mostly with the 245xlt for GRN tracking)
- Offset = 380
- Step = 12.5kHz
- Step 1. Press MENU
- Step 2. Select TRUNK DATA and press E
- Step 3. Press the UP or DOWN arrows to select the trunk bank you want to program the channels into (you can also use the VFO knob to scroll through the banks as well). When you have you bank selected, press E (or press in the VFO knob)
- Step 4. Press the UP or DOWN arrows to select TRUNK TYPE and press E
- Step 5. Choose the Type 2 UHF trunk type. The screen should show it as TYPE 2 UHF. When done, press E
- Step 6. The display should now say BASE CONFIG 1. press E.
- Step 7. Enter the first GRN base frequency of 408.8125 and press E
- Step 8. The display will change so as to ask you for the spacingfrequency. Enter 12.5 and press E
- Step 9. The display changes once again to ask for the offset value.It should be 380 by default so press E.
- Step 10. The scanner will then prompt you now for the second base. Enter 415.575 and press E.
- Step 11. The scanner will now ask for the spacing and offset, the same assteps 8 and 9. Enter 12.5 for the spacing and 380 for the offset repeater as steps 8 and 9 above.
- Step 12. Press the menu button repeatedly to exit from this mode. Then select the first channel in the bank you selected as the trunk bank by using the manual and numbers keys as you normally would.
- Step 13. Enter the first frequency of the GRN trunk site you want to program, then press and hold the TRUNK key for two seconds. A tone will sound and the display will show the M icon.
- Step 14. Continue doing this till you have entered all the channels for the site into the scanner in that bank, remembering to hold the trunk key for two seconds after each frequency. This tells the scanner they are for trunking. If you make a mistake, hold the '.' (decimal point) key down until the display is cleared.
- Step 15. Press the TRUNK key when you have finished to start trunking, you can hit the SEARCH key as well to start searching for GRN talk groups.

SOME HINTS TO HELP THINGS GO SMOOTHLY

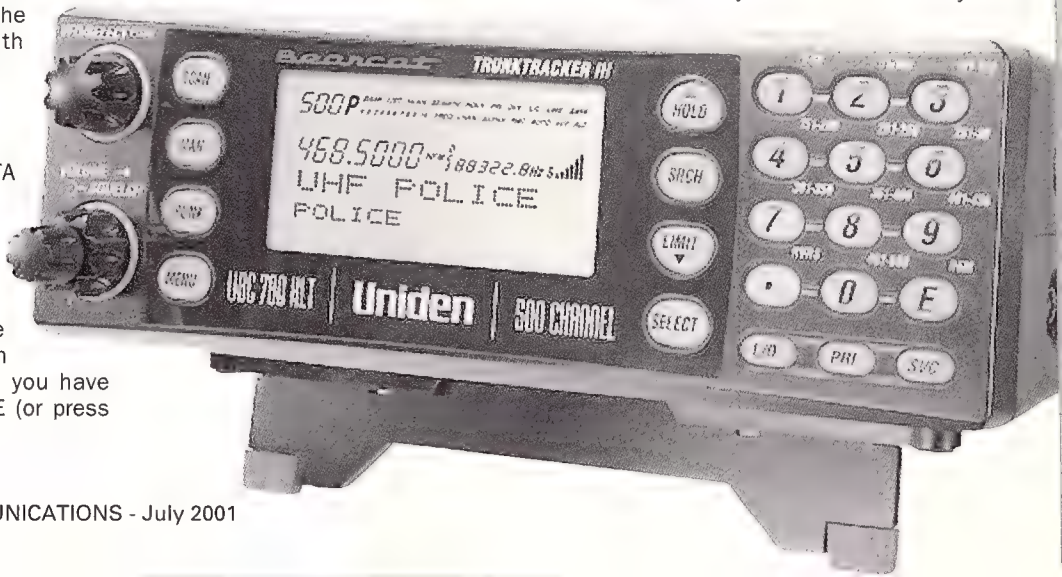
It is suggested that you also go through and lock out all the voice channels in a bank. Do not lock out the control channel. This will make the 780xlt acquire the control channel faster. You can also add more then one GRN site to a bank. Once again locking out the voice channels will assist in finding the strongest control channel faster. If you intend to use the 780xlt mobile, it is suggested in programming sites that are a fair distance apart into the same bank, so when you get out of range of one site, the scanner will acquire the other sites as you get near them and trunk, without you ever having to touch the scanner.

You cannot program different trunk types into the same bank (eg a UHF trunk system and an LTR system).

This should then track sites with the extra 413MHz channels with no problems.

The 780xlt should also be able to find other systems, such as 800MHz systems with the control channel only method. You should be able to program in the control channel for a system, and it will work out the rest. This will not work on UHF systems like the GRN.

Also different on the Australian 780xlt compared to the US model is the removal of the WX key. A service search key will be



in its place (the WX key does both features on the US version). Some new service searches will be both CB radio bands, the police, marine and air band.

TIPS & TRICKS

You don't need to Press MENU repeatedly to back out to the scanner operation. Just press and hold the MENU button and it will return to the last operating function.

Another interesting find. Put your scanner in conventional mode on channel 500. Now from the keypad enter frequency 163.2500. Change the step to 7.5Khz. Press VFO button to show FREQ on LCD. Now turn 1 click to right. LOOK NOW 163.2525MHz a 2.5Khz change. Ok, Now change step to 5 kHz. Now the frequency immediately changes to 163.2550 MHz another 2.5Khz change.

SUMMARY: YOU CAN NEVER TUNE: 163.2575 MHz even though you have 7.5Khz resolution. This frequency is NEVER able to be tuned!

UBC780XLT ALPHA TAGGING FOR DUMMIES

TO TEXT (ALPHA) TAG A PARTICULAR TALK GROUP I/D (T/G):

- Press <Menu>.
- Press <3> or Select {Trunk Data} and press <E>.
- Select the {bank} of "frequencies" you wish to text tag.
- This is the agency such as "Police and Corrective Services Etc.
- Press <E>.
- Press <5> or Select {Program ID} and press <E>.
- Select the T/G you wish to text (Alpha) tag.
- Press <E>.
- Press <2> or Select {Alpha Tag}.
- Enter the desired text.

TO TAG ANOTHER T/G

- Press <Menu>.Go to step A6 and continue.
- When finished, press <Scan>.

TO TEXT (ALPHA) TAG AN AGENCY'S GROUP OF FREQUENCIES WITH THE AGENCY'S NAME ...

- Press <Menu>.
- Select the bank of frequencies (Agency) you wish to tag.
- Press <E>.
- Press <6> or Select {I/D List Tag} and press <E>.
- Select the list to be tagged.
- Press <E>.
- Enter the desired text.
- Press <E>.

To tag another bank or agency

- Select the list to be tagged.
- Press <E>.
- Enter the desired text.
- Press <E>.
- When finished, press SCAN

PC TO RADIO CONNECTION TIP

It has been found that the radio holds a small amount of current when turned off. This could create a problem when making connections to or from the radio to a computer serial port or a line in jack for audio purposes. To avoid problems when making a connection (including disconnecting) from your BC-780XLT to your computer you, consider the following steps:

Set the DIMMER to either high, or low; [MENU], [1], [1], [1]. This step isn't necessary, but it does give you a visual indication of what's happening.

Turn off your BC-780xlt radio.

Disconnect the power cord from the rear of the BC-780xlt.

Turn on the BC-780xlt to see the BC-780xlt display light up for a brief second. Wait a few seconds before the next step. Turn the radio off and turn it back on. Again, wait a few seconds before proceeding to the next step.

NOTE: do not reconnect the power supply!

Turn off the BC-780xlt radio. All current stored in the power supply capacitors of the BC-780xlt should be drained at this point. Close all opened programs and power down your computer. Make sure your computer is powered off completely (suspend, stand-by or hibernate may provide power to the COM ports).

You can now make any necessary connections from the BC-780xlt to the computer without the risk of a short that could damage your radio and/or the computer's COM ports and/or sound card. Reconnect the power supply cord, power up the computer, turn the radio on and you may operate your BC-780xlt normally.

This procedure is necessary because the back of the radio is grounded. If you accidentally hit the back of the radio with a connector you will create a short circuit. Some people believe once they have both the radio and computer off it is okay to connect the radio to the computer's serial port. With the Uniden Bearcat 780xlt simply having the radio off is not enough, it must be disconnected from the power source and the stored up power must be drained for the safest connection to your computer.

AUDIO/RECEPTION TIPS

TURN OFF DATA SKIP. The Data Skip feature is designed for use particularly when you are searching a range of frequencies that includes paging broadcasts (such as those found in the 148-150 MHz range). Most people will not scan a paging channel or search a range with pagers (who wants to listen to annoying, incoherent tones?), it's best to turn Data Skip off.

With Data Skip on, you will occasionally find that transmissions will suddenly drop and the scanner will resume scanning when it actually should be holding on a channel. Data Skip will at times determine a sound, or lack of sound, is part of a paging transmission and will force the scanner to resume scanning or searching. Simply by turning Data Skip off you will avoid this nuisance. To turn Data Skip off, go into the System Menu, scroll down to Data Skip, select it, and then select off.

Occasionally, in the middle of a transmission, the scanner will resume scanning or searching. Turning Data Skip off will solve this problem

ADJACENT CHANNEL INTERFERENCE

To reduce adjacent channel interference while using the 780xlt, try the following;

On VHF channels you can set the bandwidth mode to NFM (Narrow FM) instead of the default FM.

If the service uses CTCSS/DCS tone you can program it for the channel you want to hear, or block it (PL lockout) for the channel you don't want to hear.

As a last resort you can set the attenuator on for that channel.

780XLT RESET

To do a complete reset on the 780xlt, do the following. With the unit powered off, hold down the [2], [9], & the [Manual] keys at the same time while turning the unit on.

This will erase everything - Full Reset.

BIRDIES

Due to the way in which the BC780xlt operates (as do all other scanners), some internal generated signals inherent in the electronics of the receiver are generated which may interfere with reception of some frequencies. These interferences are called 'birdies.'

If your scanner stops during search mode and no sound is heard, it may be receiving a birdie. You must press the search button to continue searching. Sometimes it is possible to set the search limits to avoid these frequencies.

Following is a list of frequencies which may be difficult or impossible to receive on the Bearcat 780xlt. If programmed with one of these frequencies, the receiver may be noisy on that channel or stop on that channel when no signal is present. The degree to which your radio will be affected will vary depending on your location, the antenna you are using, and the other equipment operating nearby.

If the interference is not severe, it may be possible to adjust the squelch control to eliminate the problem without excluding the desired communication.

29.7000	44.5500	50.1600
111.6000	134.1000	163.8000
245.6500	245.7000	348.9500
349.0000	378.9500	379.0000
456.0000	806.0500	895.5000
955.2000.		

Jos Hahn of Syncro Electronics continues his series of circuits galore

What do you want to do with a DTMF encoder and decoder?

We continue this month with the DTMF en/decoders using the 4028 and 4514. The 4028 has its limits, as it only has 10 outputs, but with the assistance of a few inverters, we can extend this to the full 16.

We also have to look at the desired application. What do you want to do with a DTMF encoder and decoder? ID code, selective calling, switch repeaters on and off, pumps, lights, sirens, portable traffic lights, water level of a dam, temperature-measuring from a distance, burglar alarm, boat watch, etc.

We only have to convert our information into DTMF tones and transmit it. If you only need something switched on for a short time, you simply charge an electrolytic cap together with the high impedance of a CMOS gate. I have used a relay a few times, but that is for heavy duty tasks, like pumps, motors etc. For pure electronics, I use 555s, nand gates and inverters.

Back to a decoder using the 40287, still using a relay (FIG 1). Let's take tone 9 to switch on and 1 for off. The output of tone 9 is Q10 (pin 5) of the 4028. A high on Q10 will make pin 2 and 3 (IC3) low, so pin 4 goes high and switches the relay on via TR1. The voltage on pin 4 will keep pin 1 high as well, through D3 and R6. We don't need tone 9 anymore. By receiving tone 1, (Q2) we are able to make pin 3 of IC3 high and switch off the relay. If we want to use tones higher than 9, we have to add a few inverters, but let's forget the 4028 and go for the 4514 - don't forget we have plenty of them

With the 4514, we don't need extra networks, every DTMF tone comes nicely out of this IC (FIG2). Beautiful. D is binary 0, so we have to give this output a helping hand with R5 and D1. You must remember, that if we connect STD (strobe) with TOE, there will only be an output during valid DTMF tones.

We only have to convert our information into DTMF tones and transmit it. If you only need something switched on for a short time, you simply charge an electrolytic cap together with the high impedance of a CMOS gate.

If you receive digit 8, output 8 of the 4515 will only be high during that tone. I hope, that everybody understands the DTMF encoder and decoders so far. No Questions? OK, let's go for a few more digits, it is a lot safer. I have three different ways to decode, I will share two methods with you, and the third one still makes a bit of money for me somewhere on our globe.

We'll start with two digits. Note that they always work together with the circuit of FIG 2. If I say output 5, I mean output 5 of the 4514, as written inside the IC block. Of all the DTMF circuits I have designed, a big proportion was for security. Don't forget, I lived in South Africa for 21 years and Australians have no idea what crime is. I was the owner of a two-way radio factory, complete with security gates. Still I was robbed in my own office by five blacks with AK47s. That I am still alive is a miracle. I was also co-owner of a crystal factory and my partner was carjacked and then killed.

Radio is very important over there. When we had the first multiracial general elections, my lovely wife Beverley sold more than a thousand radios in a couple of weeks. In an emergency you have to transmit an ID code and we made masses of DTMF circuits. Works very well and is affordable

The circuit of FIG 2 is our building block. Every incoming tone has its corresponding output high during that tone. Let me refresh your memory tone 0 = binary 10, * = B11, # = B12, A = B13, B = B14, C = B15 and D = B0. We can make a simple two digit decoder, but there is a limitation, the two digits must be different, so 11, 22, 33 etc are nonos, but that leaves us still with plenty of usable two digits to play with (FIG 3)

This is already a rather safe circuit, 8 and 2 switch a 555 on and 5 and 3 will switch it off. The values of C2, R8, C1 and R7 depend on the encoder used. If this is done manually and especially with a shaky hand, we have to make the val-

ues rather high. The working is quickly explained

Output 8 will charge C2, input 2 of IC3 (a 4093 nand gate) is high, but starts discharge through R8. As long as pin 2 is more than about half of supply voltage, it is considered high. Output 2 (tone 2) will make pin 1 of IC 3 high. Both gates are high and the output (pin 3) goes low and that is exactly what a 555 needs to switch on.

IC 2 (555) is purely used as a switch, not as a timer. Pin 2 needs a negative pulse and pin 4 (reset) must be high. Pin 3 is the positive output, about 4.5 volts.

To switch off, we have to either make pin 4 (reset) low or 6-7 high. Output 5 will charge C1 and output 3 will make the other gate high, pin 4 of IC3 goes low and so will pin 4 of the 555, which switches off.

If the tones are made with an automatic encoder you can make the values of C2 and R8 (C1 - R7) reasonably low. The Cs are 1uF till 4.7uF and the Rs 1-3.3M, C 4 is 10nF.

We don't have to use nand gates, it can also be done by inverters (40106). Let's go for three digits on and three digits off. On is 5-6-7 and off is 5-6-8 (FIG 4). In this circuit, tones 2 and 3 could be the same, as I built in a few tricks of my trade. It works as follows: Output 5 (of course from the 4515) will charge C5 (2.2uF). The discharge resistor (R19) is 1M - it gives us some time. Output 6 goes high now and will only make pin 1 of IC4 high if C6 is still reasonably charged. The value of R9 (2M2) and R19 (1M) are calculated in such a way, that output 6 can never make pin 1 high by itself. This principle can be used to create as many digits as you would like. Pin 1 high means pin 2 low, cap C6 will be discharged, all of this happens during tone 6. Normally pin 3 of IC4 would be low as well, but we put the strobe on that gate. Only when tone 6 has gone, pin 3 goes low and pin 4 high. The purpose of injecting the strobe is to be able to use the same tone again. The voltage on IC4 will charge C7 and everything starts all over again. Output 7 will make pin 11 high (If C7 is still more than half supply voltage, of course). Pin 2 of IC5 (555) goes low and output 3 goes high. Output 8 could switch it off under the same condition of C7

There is also a way of eliminating timing circuits, but that will be for next month, we will also give you an automatic 4 digit encoder, for which I have made a PC board.

Till next month

Jos

R&C more...

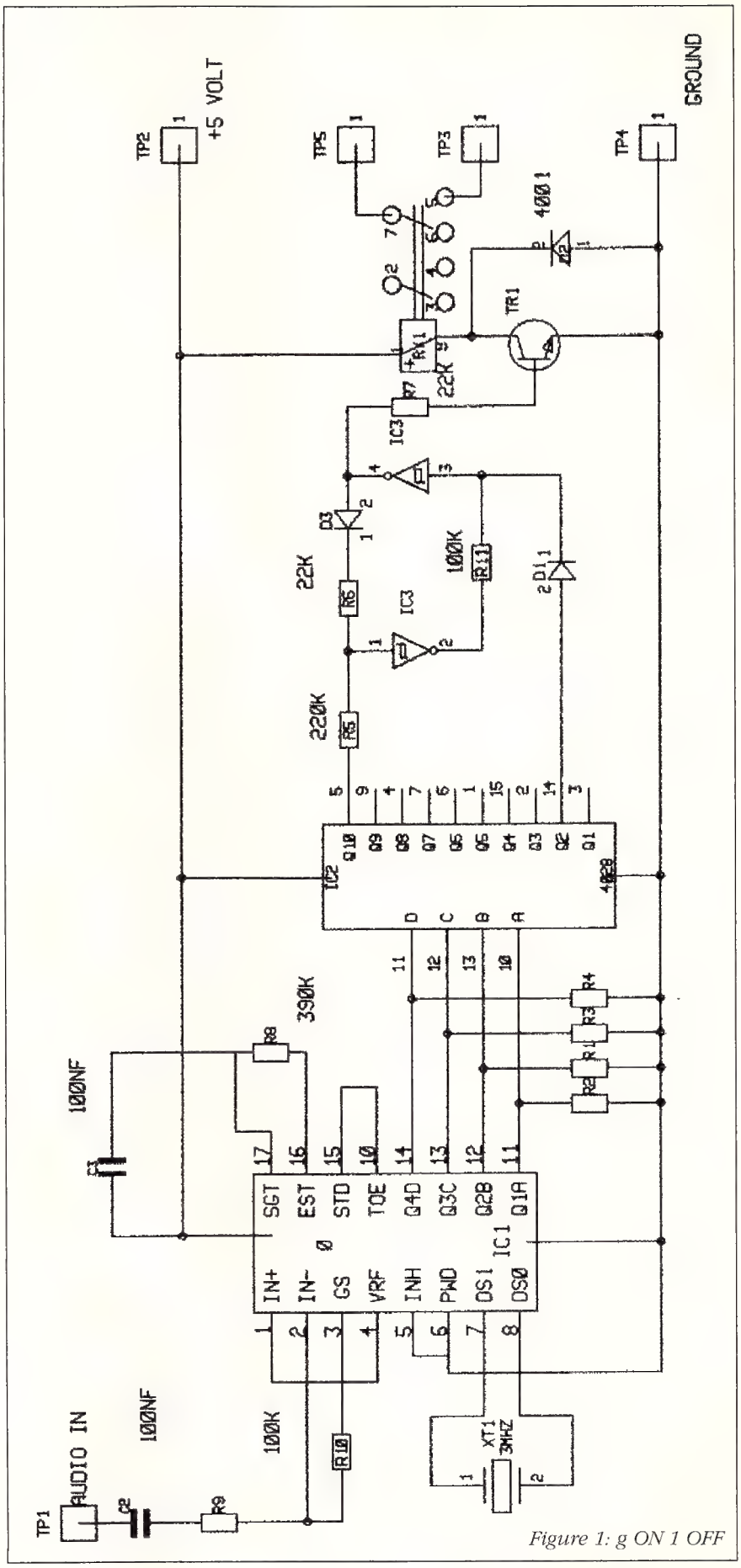


Figure 1: g ON 1 OFF

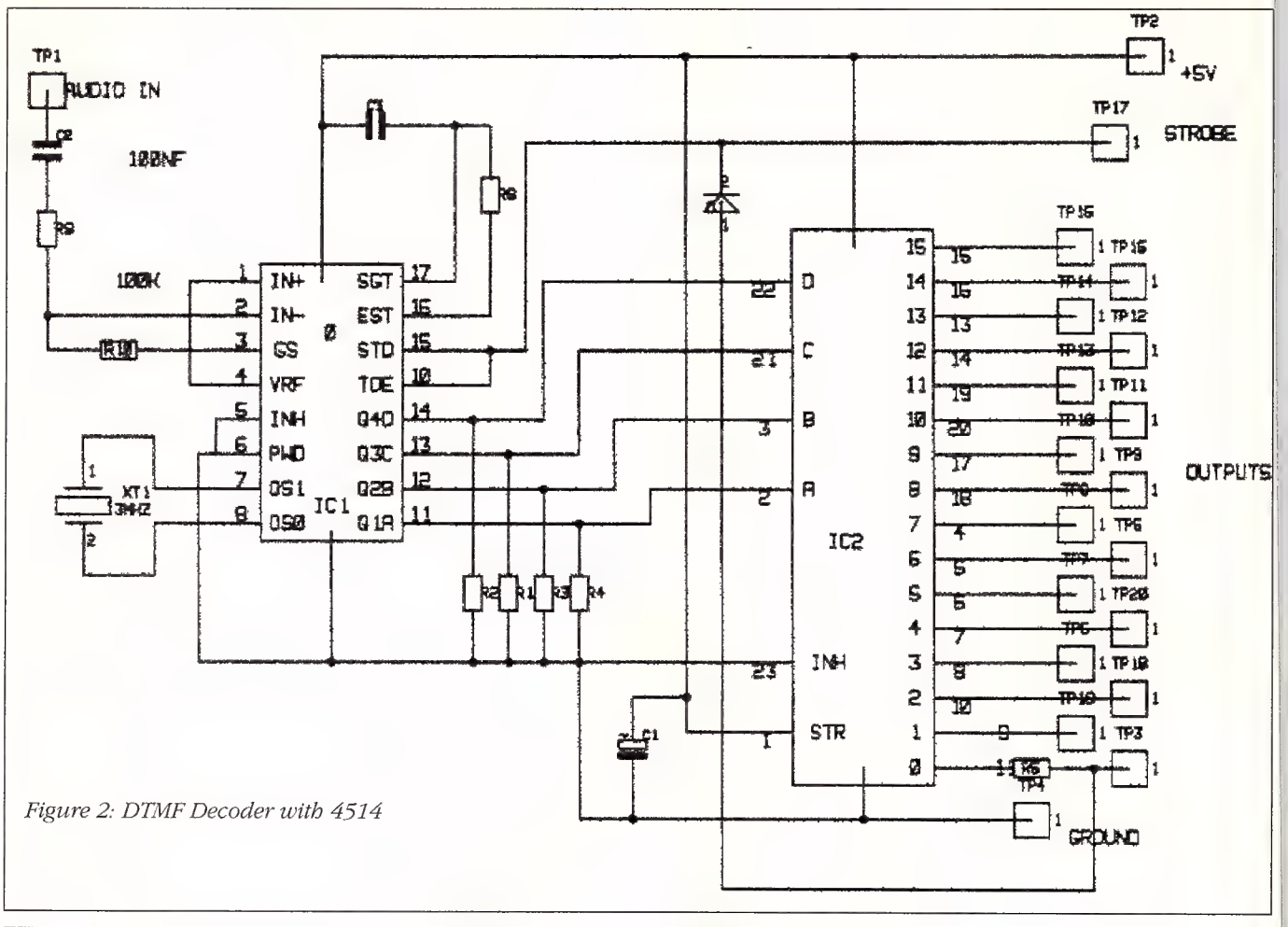


Figure 2: DTMF Decoder with 4514

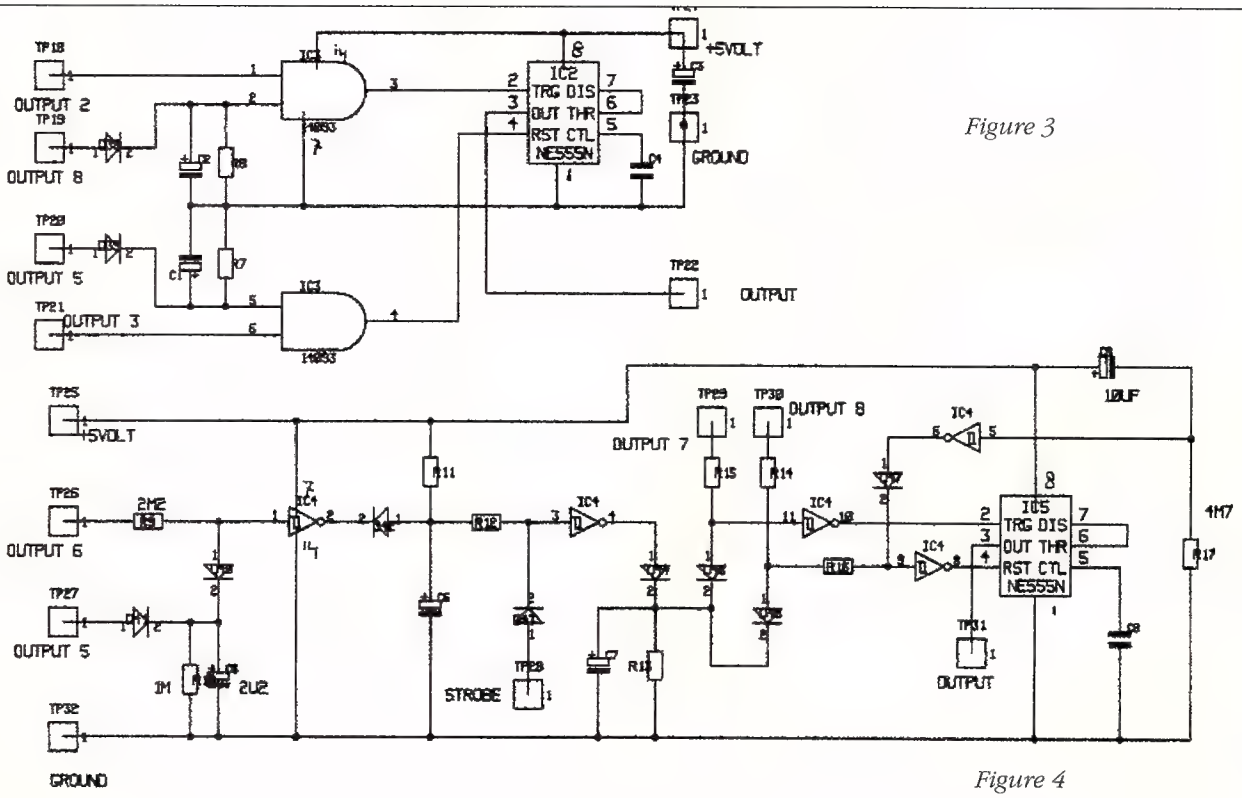


Figure 3

Figure 4

AR5000 Backlight

This mod makes the lamp function at 1/4 brightness when the radio is turned off and is in clock mode thereby allowing the clock to be viewed at night. Go about doing it like this.

Remove top and bottom covers and unplug speaker lead. Remove four* screws on each side of front panel. Remove AF gain, squelch, main tuning and sub tuning knobs (on main tuning knob remove rubber grip sleeve to get to screw), then remove tuning knob and remove the two screws holding the spindle cam. Remove the front cover (this is clipped into place).

Just above the AF and SQ control you will see a connector J5 pin 1 (brown wire) and pin 2 (red wire). Pin 1 is the 5V supply to the lamp but when the radio is turned off the 5V disappears and pin 2 is the CPU 5V rail which is at 5V all the time. Cut the brown wire (pin 1) and put a link from pin 1 to pin 2.

Remove screws holding the front PCB, and by tilting the PCB down to view the back, on the top right hand side you will see a 10-ohm chip resistor R20) and next to it a surface-mounted transistor (Q1). The function of these parts is to turn the lamp OFF and ON via the FUNCTION CONFIG menu.

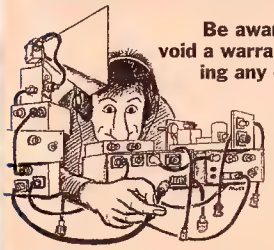
Fit a surface mount transistor (2SD601R or similar) emitter to ground, and from the base fit a 10K resistor to the 5V CPU line (red wire pin2 of J5). The 5V rail can be found next to Q1 driving the + side of the lamps to make the modification neat. From the collector of the 2SD601 fit a 56-ohm resistor to the left hand side of R20 (10-ohm resistor). This resistor is the dimmer. When the radio is turned off it will put the display to about 1/4 brightness.

Next to the 10-ohm resistor (R20) on the right hand side you will see it goes to two connections. These go though to the front of the PCB next to the LCD display and the upper connection is for the LEDs to run the S-meter -ve side. The middle is the 5V rail, and the lower is for the LCD display LEDs -ve side.

Lift the top connector run a 10-ohm resistor to a second 2SD601R (or similar) collector, the emitter goes to ground and the base via a 10K resistor to the base of Q1. The idea of this is when the radio is turned off the S-meter lamp is off and the LCD lamp is at 1/4 brightness but when the radio is turned on everything is back to normal.

Reassemble the radio (remember to plug in the speaker) and the modification is now done. You can now use the AR5000 as a proper clock radio!! Note if you now go FUNCTION CONFIG and turn the lamp off it will go to 1/4 brightness and the S-meter lamp will be turned off.

MODIFICATIONS



Be aware that you may void a warranty by performing any of the following modifications. R&C has not tested them and makes no warranty as to their serviceability

Mods, Fixes and Updates

By Greg Towells, VK2GJT
E-mail: vk2gjt@ix.net.au

BC245XLT EARPHONE AND DISCRIMINATOR

This mod will give a decent output to the external earphone socket, and for those who need to fit a discriminator tap, this is how to do it. Might as well do both while you are in there.

To gain access to the inside of the BC245, remove the rubber duck antenna, battery cover and carefully unplug and remove the battery pack. Remove the four screws that secure the case and remove the rear cover, easing the top of the cover away first.

Looking inside the scanner, as you look at the back, you will notice a small plug that looks very like the battery connector. This is the speaker connector. Carefully unplug it. Now CAREFULLY unplug the RF board facing you. It has a multipin connector in the bottom right hand corner as you look at it. The top of the scanner is on this board, so when it is removed, all that should be left will be the speaker, set front and keyboard/logic board.

When you have removed the RF board, turn it over and look for the earphone

connector solder points, the single connection nearest the board top; the small chip resistor on it should be shorted to a suitable ground.

To do the discriminator tap mod, looking at the RF board, find the 16-pin chip marked MC3361CDR2. As you look at the chip with the printing on it the right way up, pin 1 will be in the bottom left hand corner and the rest of the pins are numbered in an anti clockwise direction. Locate pin 9, which happens to be in the top right hand corner. Make a note of where this pin is.

Now look for a ground connection. There is one about 1cm towards the board top from the 3361 chip. Now connect two 15cm hook-up wires to pin 9 and ground, they should be of 2 individual colours for identification. Carefully routing the hook-up wires to the bottom of the RF board, plug the board back into its connector, making sure that the speaker wires do not snag. Plug the speaker connector back in.

Drill a 3/32 hole to take a mini-jack socket on the case rear, below and to the rear of the 12V input connector. If you lay the case rear to the side of the scanner, you will see where the socket will and will not fit! Fit the mini socket and connect the ground hook-up wire to the ground of the socket after cutting to length. Connect the -VE leg of a 4.7µf 16V tantalum capacitor to the tip connection of the mini socket, and connect the wire from pin 9 to the +VE leg of the cap after cutting to length. Carefully dress the cap legs and wires so that there are no shorts or obstructions. Secure the capacitor in place on the case rear with melted candle wax. Carefully replace case rear, screws, battery and cover.

AR8200 CPU NOISE ELIMINATION

The CPU noise of the AR-8200 is a known problem, reported by many users. AOR has modified the CPU shielding on latest shipments in order to fix it. However, using the portable antenna, there are frequency ranges where the CPU noise is still evident, and affects sensitivity and scanning operation on VHF.

A simple test shows if the weak signal you are receiving is noisy simply because it is weak or because it is disturbed by the CPU. Press and keep pressed the PWR key, as you would do to turn the radio off, but *DON'T RELEASE THE KEY*. The CPU, together with the LCD, is turned off but the receiver is still alive as long as the PWR key is kept pressed.

If the signal out of the speaker becomes clean, it means that it was disturbed by the nasty CPU noise. This mod is how to reduce or completely eliminate that CPU noise in the receiver.

First of all, remove the batteries, the whip antenna, the ferrite MW antenna, the option card (if any) and the wrist strap. Leave the battery cover open and the option card slot cover latched. It is also wise to protect the display window against possible scratches with a protective film before disassembling the radio.

Open the radio. Find a suitable crosshead screwdriver to unscrew the two screws in the battery compartment, the three on the back of the radio, and the two on the connectors side, just close to the wrist strap anchor (the connectors side is the one having the ear, power and computer ports).

Notice the different size and type of screws used or you will get into trouble when reassembling! Open all dust caps because they keep the two shells together, and gently pull apart the front shell from the back shell.

THIS IS A CRITICAL OPERATION – you may stress the mechanical controls of the radio.

While pulling, the side panel (that shield-shaped plastic piece with the rotary dial, FUNC key, arrow keys etc) must be kept together with the front panel, and the top panel (the one with the VOL and SQL controls) must be kept together with the back panel.

Once the two portions start getting separated, always check that none of the rubber dust caps goes back in its hole, otherwise you cannot separate the two parts totally.

Place the opened radio on a clean, flat surface with the BNC and the two VOL/SQL knobs towards you. The two portions should be side-to-side along the connector's side: the front portion is on your left, face down, and the back portion is on your right.

Be careful not to stress the two ribbon cables that connect the CPU PCB to the RF PCB and to the OPTION PCB. Familiarise yourself with the interior of the radio. The CPU board, on your left, has a copper shielding that hides most of the area. Some radios have this board marked 82-03B and the shield almost extends to the speaker side edge. This is possibly the improved shielding from the factory. It is unknown how effective this shielding is, and whether this modification can work only on "improved shielding" units. But once you have opened your radio, I suggest you to try it anyway.

On your right, the back portion holds the radio section (two stacked boards) and the option board that also includes the battery charger circuit and the computer connection. You will notice that

GND layer covers a large area of this board, and it has a large notch where a VERY big resistor is fitted. Below this resistor, a small Z-bent metal bracket fastens the radio section to the plastic case by a small screw (let's name it as "screw A"). Actually, the option board is providing the majority of the CPU noise radiation, likely because the only provided GND return is the highly inductive path through the ribbon cable.

The radio section has a small metal frame that holds the pots and the BNC connector. Next to the Volume pot, this frame is bent and has a threaded hole where fits one of the 7 screws that normally keep the radio assembled. Let's name this hole as "hole 1". Its counterpart in the front portion of the radio is a hole in the plastic case, close to the wrist strap anchor. Let's name this last hole as "hole 2".

BC245XLT AUDIO FIDELITY

Here is a sound mod to give the 245 a crisper sound, similar to the Icom IC-R2. Remove the battery cover and battery pack. Remove the four screws from the back cover and remove the cover. Remove the speaker connector on the left side of the RF board (white connector with black & white wires).

After removing this, gently pry up this board just below the 22-pin connector on the lower right-hand corner. Flip the board you just removed over on its back and find the solder pads of the volume pot.

Trace the outer two circuits to just below the pads and you will find two surface mount components, The first, a black numbered resistor, the second a brown capacitor, just below the first numbered resistor.

Remove the brown capacitor, reassemble radio, and enjoy.

IMPROVE GROUND PATHS

This is the purpose of the modification and requires two operations; to connect the GND layer of the Option Board directly to the GND of the radio section, and to connect the GND layer of the CPU board to the GND of the radio section.

To do the first connection you must solder one end of a 20mm long bare copper wire to the GND layer of the option board, and squeeze the other end under the head of the screw "A".

Since this wire must be straight and as short as possible, scratch a 2x2mm area of the solder mask (that green paint that protects the PCB) from one of the two "flaps" that hold the big resistor, exposing a copper spot of the GND layer.

It is *IMPORTANT* to note that none of the big resistor terminals are at ground, nor are any of the nearby components! The only way to get a ground access on the option board close to the screw "A" is to scratch off a small solder paint area.

The second connection requires a little more work. From a 0.2 mm copper (or brass) sheet, thin enough to be cut by ordinary office scissors, you must cut a small 4x8mm strap. Figure it in your mind as composed by two 4x4mm parts, and drill a 2mm diameter hole in the centre of one of these two ideal parts. Since it is very difficult to drill a hole in such a small piece of metal sheet, I suggest to first drill a 2mm hole in a larger piece of copper sheet, and after to cut around it the 4x8 mm rectangle.

Align the hole of this tiny copper strap you built against the inner side of the "hole 2", while bending the strap in "L" shape to overlap 2 or 3 mm of the CPU PCB GND layer. Mark this small overlap area of the CPU PCB and CAREFULLY scratch off the solder mask to expose the GND copper. Pre-tin this area and then solder upon it the horizontal part of your tiny L-shaped copper strap, while keeping the vertical part aligned and pressed against the inner side of the "hole 2".

To complete this operation, a temporary-screwed 1.5mm screw + nut in "hole 2" can be helpful to keep the copper strap tight and aligned in place. Be quick in soldering (but be sure to make a good solder joint) and be careful to not damage the radio plastic case with the soldering iron. If you have done a good job, when the radio is reassembled, this copper strap will provide a direct electrical connection between the CPU board GND and the "hole 1" in the radio section. Reassemble the radio. While reassembling the radio, check that the copper strap you have just added stays in place and is "squeezed" between the plastic case and the metal frame where one of the 7 screws is being screwed. The rubber dust caps will make reassembling operation quite difficult, thus try to keep them in the "open" position. That's it. Now it's time to check on known weak signals how effective the modification has been. Repeat the "PWR key press" test described at the beginning on the same signals where you have noticed the CPU noise.

DISCRIMINATOR TAP POINTS FOR UBC780XLT

The radio has both a discriminator output and a data slicer output. Since the radio decodes the control channel it needs a data slicer circuit. The slicer output is internal to the radio since the decoding takes place there but you can tap it and bring it outside the radio and into an external decoder. Essentially the slicer circuit can be thought of as a hard limiter applied to the discriminator output, also internal to the radio.

Remove the top cover of the radio. This will expose the bottom of the circuit board where you can get at the necessary points. The discriminator output is 1 volt peak-to-peak centred on a 1 volt bias. The slicer output is 3.2 volts peak-to-peak centred on 1.6 volts ie. 0 to 3.5 volts swing (TTL compatible).

Have fun with your new rig.....

73 de Greg Towells

For All Your Requirements

AUTHORISED DEALER

ICOM

KENWOOD

AMATEUR ■ COMMERCIAL
MARINE COMMUNICATIONS

Tower Communications

14 Mary Street,
Hazelmere,
Western Australia 6055

Telephone: **(08) 9274 1118**
Facsimile: **(08) 9250 3734**

E-mail: tower@eon.net.au
WWW: http://www.tower.visionimage.com.au

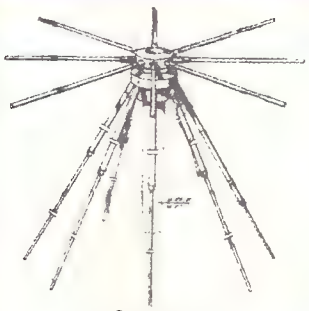
SYNCRO

AUSTRALIA COMMUNICATIONS SPECIALISTS

New Yupiteru scanner

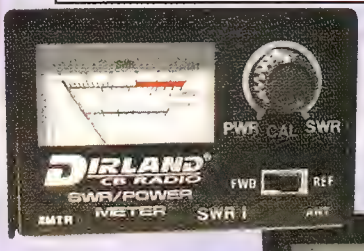
MVT7300 All mode. Smaller, lighter and more efficient 521Khz – 1320MHz, with de scrambler and clone function **$625**

MVT9000 Top of the range Yupiteru scanner. Double VFO's, band scope, 500 KHz to 2039 Mhz **$750**

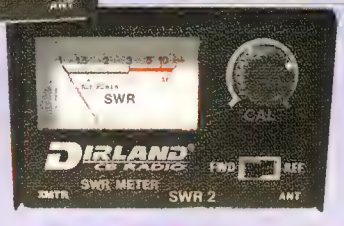


Discone antenna
20 – 950MHz **$98**

F15 Handheld frequency counter 8 digit LED 6MHz – 1.3 GHz Meaure your frequency on your vehicle with this handheld **$285**



26-30 MHz SWR meters
SWR 2 swr meter **$15**
SWR 1 swr/power meter **$18**



DP202
26-30 MHz criss cross meter with direct reading, measures swr and power in one go $65

Mail orders credit cards, cheques & COD's. Sales, service and shipping nation wide.

Goods available direct from us or through appointed dealers.

Sole importers or Dragon, Magnum Delta Force, Palomar, Zetagi, Sirtel, Sirio, Sadelta, Dirland

197 FALLS ROAD LESMURDIE WESTERN AUSTRALIA 6076
Tel: +61 (08) 9291 9982 Fax: +61 (08) 9291 9984 Mobile: +61 0404 091 123
Email: hahn@syncroelec.com.au Website: http://www.syncroelec.com.au

International 2 m/70 cm QSOs – via IRLP – one of the biggest amateur technological developments in 50 years!

"BREAKING NEW GROUND"

BLUE MOUNTAINS AMATEUR RADIO CLUB, SYDNEY NSW AUSTRALIA.
By Bob Bell VK2UTG, (and Peter Illmayer VK2YX, BMARC)

About eight years ago, a bright young local Sydney amateur named Yoshe Strasberg, VK2BYE, from Mt Colah NSW, was experimenting with something truly exciting and new. An interface of ham radio and the internet, to allow international radio contacts to be made on vhf 2 metres or uhf 70 centimetres.

Yoshe envisaged a system that would even allow operators utilising hand held portable radios on different sides of the globe to communicate, in voice, through their local repeaters, linked through the internet. At this exact same time, in August of 1993, in the editorial of a radio communications magazine I was publishing/editing at the time ("Listening In"), I wrote the following:

"A newsagent friend of mine was recently discussing with me some interesting trends that occur in his store concerning communications and computer magazines. Communications magazines attract reasonable customer attention and sell well ... that is until the computer magazines are delivered around midweek once a month and make it onto the shelves. Then, the communications magazines take a nosedive, while the computer chips, modems, and games pick up our potential readers and entice them away from the communications magazines.

Not all that long ago, Tom Kneitel, writing in Popular Communications from the USA, exposed the same view of the scene in America, adding that CDs, videos, and other electronic gadgetry is sucking away our hobby's lifeblood ... our potential recruits to the monitoring and communications hobby. It is happening worldwide, and we should all be aware of it for the good of the hobby ... to ensure that the pastime we love lives on.

Whether these "lost" potential recruits would have drifted into monitoring, or ham radio, or any other communications pursuit, is immaterial. They COULD HAVE BEEN OURS, and the enemy (computers, CDs and the like) are poaching them. It has to stop ... or our hobby will stop ... just like that!"

And with what I was hearing of Yoshe's innovative idea in back then in 1993, it occurred to me that this kind of progressive thought and exciting technology might just be the key to salvation for amateur radio! A way to attract the kids and get them to become hams!

Further to Yoshe's radio/internet linking system, although the basic concept was brilliant, the actual "prototype system" Yoshe had devised was quite crude in nature and technology, and was fairly user unfriendly "held together by rubber band and chewing gum technology"

Yoshe himself admitted this at the time, telling those who asked that it was "held together by rubber band and chewing gum technology". But regardless, it was an innovative idea, in fact I believe one of the first major innovations in ham radio in many years. It was obviously an opportunity for Yoshe to experiment and improve his crude system, which would undoubtedly become much more sophisticated further down the track.

Yoshe's revolutionary system required continual human intervention to correctly set up the QSOs, and he then had to constantly monitor the progress of the two way contacts to ensure levels were stable and other technical considerations were normal. And to be painfully honest, as Yoshe was free to admit, these first attempts were not of a high standard in quality. Yoshe was aware of that and was intent on devoting a lot of time and trouble to improving and refining this great raw idea that had come to him.

Regardless of the poor quality or problems experienced by those using Yoshe's manual interface, this ground-breaking and visionary ham actually succeeded in allowing local Sydney amateur 2m stations to talk to hams around the world on 2m vhf and 70cm uhf frequencies.

Some of the QSOs were with the USA, others were with UK stations, and of course there was the occasional contact with Israel, Yoshe's homeland.

Yoshe mainly played the part of "controller"

At that point, most of my 2m activities

VK2RBM's IRLP, set up.

BMARC club member at work

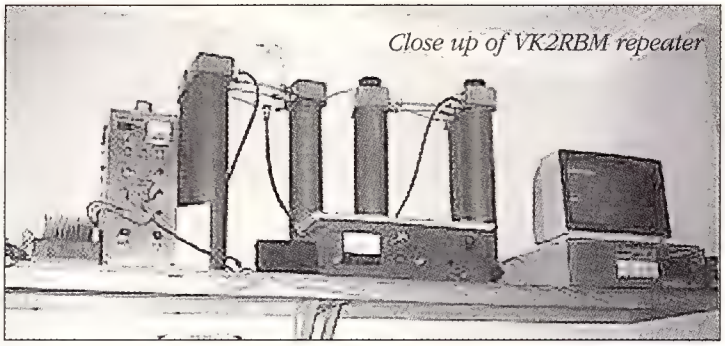
were mostly concentrated on Sydney's southern suburbs repeater at Heathcote on 146.800 MHz. Many of Yoshe's original internet-linked radio contacts were routed through this repeater. Yoshe mainly played the "controller", generously allowing other hams using the repeater to talk to their overseas counterparts. He was not one to "hog" the limelight. In between my "6800" contacts, as I "channel surfed", I heard Yoshe testing his system on various Sydney repeaters, such as Dural 147.0 MHz and Terrey Hills 146.875 MHz.

While most hams were quick to praise him for his willingness to experiment (and isn't that what this hobby is supposed to be about, experimentation?), he did have his detractors. Some fanatical "purists" in our ranks did not like what Yoshe was doing. The poor guy was (I believe) hounded by a fairly vocal minority, and in the end, this forward-thinking and highly intelligent amateur operator has seemingly disappeared from Sydney's 2m bands. I believe he still holds his callsign, but I no longer hear him calling on the bands these days.

I personally thought the great ideas that Yoshe Strasberg had been developing all that time ago were going to be lost to the amateur fraternity. But a very go-ahead and youthful amateur radio club in Sydney's west, the Blue Mountains Amateur Radio Club (B.M.A.R.C.), has picked up where Yoshe Strasberg left off. And they have really run with the ball, and have in fact scored a series of goals.

Eight months ago, BMARC's Peter Illmayer (VK2YX) began discussing with his friend and fellow club-member Steve Leatheam (VK2BGL) the possibility of connecting to a new type of internet/radio linking called "I-Phone". This new system was a definite improvement over the improvised system of VK2BYE, but still had drawbacks. It was based on "Microsoft Windows" software, and still required positive human intervention. Particularly in the way of having to very carefully "ride the levels" of the audio product and dealing with the inbuilt VOX circuitry of the I-Phone 4.5 interface.

Regular daily connections by BMARC club members and others using the Blue Mountains repeater VK2RBM on 147.050 MHz were made using I-Phone 4.5 technology. Stations with which they communicated included G7WFM in Nottingham, England, G4EQQ and G4JKQ in Derby, England, W2ZQ in New Jersey USA, and VE3TTT, London, Ontario, Canada. The local B.M.A.R.C. control station for I-Phone was run by Steve Leatheam, VK2BGL, from his western Sydney home.



Close up of VK2RBM repeater

OVER 200 HAMS (MOSTLY VKS) HAD TAKEN PART

On Australia Day this year, Peter Illmayer used the I-Phone system to co-ordinate a national (which became an international!) linkup between repeaters in most states of Australia. The response and enthusiasm received from most states who participated was truly sensational. By midnight, over 200 hams (mostly VKs) had taken part. Many commented that it was one of the most enjoyable days they had ever experienced on ham radio!

MORE THAN THEY WERE PREPARED TO TOLERATE

This system worked quite well by comparison with what had come earlier, but more could be done. Never resting on their laurels, both Steve Leatheam and Peter Illmayer were convinced more was possible. They were unhappy with problems that Windows was causing within the system, and a basic flaw they identified with the linking mechanism. They firstly initiated some enhancements, including DTMF control. One major problem that I-Phone displayed was the genuine concern that non-amateurs with microphones and speakers connected to their computers were quite able to access the system and talk to hams on I-Phone. Subsequently, the non-amateur individuals had their voices broadcast over ham radio repeaters in the cities that were participating. This fact alarmed various governmental communications agencies, like Australian Communications Authority. It was also a big concern to Peter and Steve and all other amateurs taking part. This situation, combined with the instability of the Windows operating system, proved to be more than they were prepared to tolerate, and it became the straw that eventually "broke the camel's back". The boys went looking for far better internet linking technology, that would satisfy club-members requirements to talk overseas through vhf/uhf frequencies, and also appease the ACA's legitimate concerns re non-amateur access.

A Canadian amateur, David Cameron, VE7LTD, from West Vancouver, was developing a system called "IRLP" (Internet Radio Linking Project), based on a Linux system (avoiding the Windows flaws). The system was very user-friendly, and incorporated some great features.

"PUBLIC KEY ENCRYPTION"

In order to prevent non-amateur Internet users from "crashing" the system and taking part in the QSOs, "public key encryption" was instigated. A 512 bit PGP key is utilised to authenticate the nodes before the audio connection is established. Now, for the truly paranoid, maybe David Cameron (VE7LTD) can be talked into a 2048 bit key, which would put IRLP security on par with that enjoyed by the Bank of England! The "Voice over Internet" programme "Speekfreely" is the heart of the system. It has been modified by Dave Cameron to include push-to-talk control. This ensures clean switching of transceivers is achieved. Nothing like typical time delays of stock-standard VOX circuitry.

INDIVIDUAL PIN NUMBER

The rest of the system is simplicity plus. A four-digit DTMF code access, with full voice feedback. Custom tasks can be performed on the Unix box via DTMF, such as, telling the time, rebooting the machine, sending email or sms messages via the IRLP node. Anything that can be done from the controlling console can also be done by individual user amateur operators in the field (by radio) using their DTMF keypads. PIN number access can be provided if required. Each user can have an individual PIN number allocated, and greeting messages can be customised. As stated, non amateur "internet people" just cannot get into the system, thanks to "PGP".

The IRLP system has the ability to function on both high and low bandwidth internet connections. This means that no one in Australia is excluded from running an IRLP node. Maybe, just maybe....this is the ideal way for you and your club to excite the ham and wider community and generate fresh interest in your local amateur repeater!

And IRLP is not designed to generate useless traffic as it is driven by the users, and once a link is established, there are timers on the link at each end monitoring activity duration. Should there be a break of five minutes, or no repeater key-ups at either end, the link will automatically disconnect. This ensures that local QSOs are not impacted by remote links being maintained.

HOW TO USE THE LINK?

Basically, you don't do anything different to what you normally do on 2m or 70cm. You put a call out and you talk. If you are a Blue Mountains Amateur Radio Club member, you will additionally be supplied with a code-list of the eighty-six nodes worldwide that can be accessed through

the system, which tells you the four digit sequence to key in to get the node opened through which you wish to communicate. Otherwise it's business as usual. Simple isn't it?

NODES INSTALLED, OR INSTALLATION IS ALREADY UNDERWAY,

In Australia, nodes are either already installed at, or installation is already underway, in Perth, Fremantle, Sydney, Melbourne, Brisbane and through a linked repeater system, from Wollongong to Bateman's Bay in the south. The Illawarra Amateur Radio Society in south eastern NSW is also a progressive club, which has done much through the efforts of Rob McKnight (VK2MT) to link repeaters. When they come online with IRLP, the potential of the local Aussie side of the IRLP system will be far greater due to this great Illawarra repeater-linked system.

The IRLP station operated by the Blue Mountains Radio Club in NSW is actually situated at the home of Peter Illmayer, in Sydney's west, about 60 kilometres from the Sydney CBD. The core of the system is the Philips FM 828 transceiver, modified to include CTCSS rx. The 828 is of course crystal-locked, and is capable of a 100 percent duty cycle, in ambient temperatures up to 50°C. The antenna is a Diamond X50A secured to Peter's verandah.

Interfaced to the FM 828, is the IRLP computer, a Digital Venturis Pentium 133, with 64Mb of RAM, and 8Gb of storage. The internet connection is a 128k ISDN link, made up of two x B + D 64k ISDNs. And the Network is 100Mb switched.

The operating system is LINUX, with the microphone input and the speaker output interfaced to the line in/line out soundcard.

The system requires NO HUMAN INTERVENTION, except with the nodes operated by stations/clubs in the United Kingdom. The law there stipulates that operators have to be present as overseers while the link is up.

DTMF CODE SECRECY

Providing the infrastructure for the IRLP node was no mean feat, which required a modest amount of capital expenditure, and of course, many hours "tuning up" the node by Peter Illmayer, Steve Leatheam, and their helpers. Almost all clubs sponsoring an IRLP node are providing the access codes free of charge to their membership. This is primarily to encourage local amateurs to support their amateur radio club, and be more involved in their hobby.

The codes, which can be keyed in on a DTMF encoder, establishes the link with a desired node overseas or interstate. But obviously when the nodes are already "opened" by a club member keying in the appropriate code on his DTMF keypad, any amateur able to access the repeater can use the node, and is free to speak across the link! You do not have to be a member of the Blue Mountains Amateur Radio Club, although of course they would like you to join!

(A point of interest here is that the Blue Mountains repeater VK2RBM was involved with the City of Victoria, British Columbia, Canada, helping to celebrate "Marconi Day". Local 2m operators in Sydney conducted QSOs with their Canadian counterparts throughout the day on 8th of May this year. Members of the general public in British Columbia were invited to use the IRLP link as "2nd operators", in conjunction with celebrations undertaken by local Government in B.C.)

Credit for the Sydney IRLP node coming on line has to go to IRLP gurus Peter Illmayer (VK2YX)and Steve Leatheam (VK2BGL), along with Phil Derbyshire (VK2FIL, President of the BMARC), Greg Arrell (VK2KGA), Adrian Cloutt (VK2BFN), along with Andrew (VK2AFL), Stephen (VK2AVW), Daniel (VK2DC), Terry (VK2UX), Michael (VK2XMD), John (VK2QN). Special mention for Geoff (VK2XYJ) who assisted Peter Illmayer with Linux support, and Peter (VK2JPJ) for providing the internet bandwidth. And Dave (VK2JDC) for general assistance in setting up the link. If you are a Sydney based ham and you wish to join a progressive amateur radio club, and are not sure which one to approach, may I suggest you contact the Blue Mountains Amateur Radio Club through the net, or enquire about membership with members of the club on the BMARC 2m repeater on 147.050 MHz (+600 offset). The website address for the BMARC is: http://www.qsl.net/bmarc

As previously stated, there are currently 86 nodes worldwide. These include:

VE1WRC	AMHERST	NOVA SCOTIA	CANADA	VE7BHI	PORT ALBERNI	BRIT. COLUMBIA	CANADA
KB8JXX	ANCHORAGE	ALASKA	USA	VE5IOU	PRINCE ALBERT	SASKATCHEWAN	CANADA
N4NEQ	ATLANTA	GEORGIA	USA	VE7FFF	PRINCE GEORGE	BRIT. COLUMBIA	CANADA
W4DOC	ATLANTA	GEORGIA	USA	VE6TE	RED DEER	ALBERTA	CANADA
VE2TPE	BAIE-COMEAU	QUEBEC	CANADA	VE5WM	REGINA	SASKATCHEWAN	CANADA
VE6RPT	CALGARY	ALBERTA	CANADA	NV7RM	RENO	NEVADA	USA
VE6ZV	CALGARY	ALBERTA	CANADA	WR2ROC	ROCHESTER	NEW YORK	USA
VE6WRT	CALGARY	ALBERTA	CANADA	J73D	ROSEAU	ST GEO.	
WX7Y	CASTLE DALE	UTAH	USA	J73CS	ROSEAU	ST GEO.	
VE7RNA	CHEMAINUS	BRIT. COLUMBIA	CANADA	K6JSI	SAN DIEGO	CALIFORNIA	USA
VE3PGC	CORNWALL	ONTARIO	CANADA	K6UB	SARATOGA	CALIFORNIA	USA
N0PSR	DENVER	COLORADO	USA	VE5SKN	SASKATOON	SASKATCHEWAN	CANADA
REF2	DENVER REFLEC	COLORADO	USA	VE5CC	SASKATOON	SASKATCHEWAN	CANADA
KA3VMA	DREXEL HILL	PENNYSYLVANIA	USA	REF3	SASKATOON REF.	SASKATCHEWAN	CANADA
VE6SBR	EDMONTON	ALBERTA	CANADA	K7PP	SEATTLE	WASHINGTON	USA
N3APP	ERIE	PENNYSYLVANIA	USA	K7MMI	SEATTLE	WASHINGTON	USA
VE6TRC	FT. MURRAY	ALBERTA	CANADA	G4CUI	SHEFFIELD	UNITED KINGDOM	
VO1HHR	GRAND FALLS	NF	CANADA	N7BFS	SPOKANE	WASHINGTON	USA
VE7RGF	GRAND FORKS	BRIT. COLUMBIA	CANADA	VO1KEN	ST JOHNS	NEWFOUNDLAND	CANADA
KC8NCE	GRAND HAVEN	MICHIGAN	USA	N8DNX	STUTSMANVILLE	MICHIGAN	USA
VE1NSG	HALIFAX	NOVA SCOTIA	CANADA	VE4SRR	SWAN RIVER	MB	CANADA
VE30D	HALTON HILLS	ONTARIO	CANADA	VK2RMB	SYDNEY	NSW	AUSTRALIA
AH6JA	HILO	HAWAII	USA	VA3LU	THUNDER BAY	ONTARIO	CANADA
AH6CP	HONOLULU	HAWAII	USA	VE3RAK	TORONTO	ONTARIO	CANADA
WD6AWP	HUNTINGTON BCH	CALIFORNIA	USA	VE3ADT	MILTON TORONTO	ONTARIO	CANADA
VE3MUS	HUNTSVILLE	ONTARIO	CANADA	N7CK	TUCSON	ARIZONA	USA
VE7TSI	KAMLOOPS	BRIT. COLUMBIA	CANADA	W7FDF	TUCSON	ARIZONA	USA
VE3RBM	KITCHENER	ONTARIO	CANADA	N4GLB	UPSTATE	STH CAROLINA	USA
W7AOR	LAS VEGAS	NEVADA	USA	VE7RHS	VANCOUVER	B RIT. COLUMBIA	CANADA
VA6IRL	LETHBRIDGE	ALBERTA	CANADA	VE7URG	VANCOUVER	BRIT. COLUMBIA	CANADA
VE3SUE	LONDON	ONTARIO	CANADA	VA7RDX	VANDERHOOF	BRIT. COLUMBIA	CANADA
KE6PCV	LOS ANGELES	CALIFORNIA	USA	VE7RVN	VERNON	BRIT. COLUMBIA	CANADA
K1IMD	MATTITUCK	NEW YORK	USA	VA7OKN	VERNON	BRIT. COLUMBIA	CANADA
AH6GR	MAUI	HAWAII	USA	VE7VIC	VICTORIA	BRIT. COLUMBIA	CANADA
VE2BRR	MONTREAL	QUEBEC	CANADA	WA3KOK	WASHINGTON	D.C.	USA
VE2RJS	MONTREAL	QUEBEC	CANADA	KF3DY	WELLSBORO	PENNYSYLVANIA	USA
VE5RAD	NTH BATTLEFORD	SASKATCHEWAN	CANADA	VY1RW	WHITEHORSE	YUKON TERRITORY	CANADA
VE3DPL	NORWICH/DELI	ONTARIO	CANADA	AH6LE	WILSONVILLE	OR	
WA6RQD	OCEANSIDE	CALIFORNIA	USA	VE4UMR	WINNEPEG	MB	CANADA
VE7REE	PENTICTON	BRIT. COLUMBIA	CANADA	VE8YK	YELLOWKNIFE	NT	CANADA
VK6RNC	PERTH	WA	AUSTRALIA	VE8NWT	YELLOWKNIFE	NT	CANADA
N3IO	PHILADELPHIA	PENNYSYLVANIA	USA	REF4	YELLOWKNIFE	NT	CANADA

"FLIGHTWATCH 2001" by **BOB BELL**

"SINGAPORE 006 - THE ACCIDENT"

The accident shook the airline industry to its core. The travelling public, and we, as airline radio monitors, want to know what happened.

SOME FACTS ABOUT SINGAPORE AIRLINES...

We are going to investigate this very high-profile air accident, and try to determine some of the factors which led to the demise of a perfectly maintained and serviceable state-of-the-art airline aircraft, which was Singapore Airline's Boeing 747-412 variant, and the death of 82 passengers.

The accident shook the airline industry to its core. The travelling public, and we, as airline radio monitors, want to know what happened.

Some airlines are known across the world for their non-caring attitudes and poo or sloppy work practices, and poor atten tion to maintenance detail. Singapore Air lines is certainly not one of those airlines It has had the very highest reputation, and safety record, pouring every dollar neces sary and then some, into making sure its aircraft are the best flying in the world.

When you've got your handheld scan ner in tow, and you're watching airliners come and go from an airport vantage point, and you see one taxi past you belonging to a well-known overseas air line, you are sometimes surprised, even taken aback, by the poor presentation of the aircraft.

Unwashed, with blackened undersides or sides of the fuselage, or the engine nacelle panels black and filthy; airlines owning these aircraft simply don't care about their public image, and just don't bother to keep them clean. If they did, it would save them considerable amounts of money in fuel costs. It's a proven fact that a dirty aircraft with the extra weight of dirt and grime uses more fuel than.

Singapore Airlines don't fit into this "sloppy airline" category. Every one of their aircraft will absolutely not be signed off to fly the sector just because it is an airworthy aircraft.

Date:	October 31, 2000	Visibility:	2,950 feet
Time:	23:18 hours local	Crew:	20 on board (fatalities among these, no flight deck crew, all flight attendants)
UTC time:	14:18 zulu		
Location:	Chang Kai Shek International Airport, Taipei, Taiwan	Passengers:	159 on board (fatalities among these)
Code:	RCTP (TPE)	Total S.O.B.:	179 Souls-on-Board (SOB means crew, plus passengers)
Co-ordinates:	25 05.4121.13.5E		
Type:	Boeing 747-412		
Operator:	Singapore Airlines	Fatalities:	82 persons
Registration:	9V-SPK	Injured:	68 (major injuries)
Call sign:	"Singapore 6" (SIA006) or (SQ006)	Flight phase:	Takeoff
		Leg:	2nd leg, from Taipei (RCTP) to Los Angeles (KLAX)
Airline 3code:	SIA		
Airline 2code:	SQ	Nature:	Scheduled passenger air transport operations
Flight plan:	Singapore International/Chang Kai Shek (Taipei) International/Los Angeles International	Cause:	As yet undetermined officially - investigation may take 12 mths or more
Con. Number:	28023/1099	Departure:	RCTP - Chang Kai Shek, Taipei, Taiwan, 22:55 hrs local
Build year:	1997		
Delivered:	January, 1997 to Singapore Airlines (new)	Destination:	KLAX - Los Angeles International Airport, California, USA
RW used:	RW05R	ETA:	06:15 local, Pacific Time, Los Angeles.
RW cleared:	RW05L		

Photograph: Copyright Dennis Yan

Unless it is also spotlessly clean, and well presented, the aircraft will not fly the route. Singapore Airlines management is a stickler for detail and very meticulous in its maintenance and care of its aircraft.

THE AIRLINE IS A LEADER

The airline realises it is a leader, is recognised as such, and it is run as a leading airline. There are no Third-World airline practices with SIA. I have always been totally impressed with Singapore Airlines and the way it does business, and I have told people so. That's why the reporting of this crash brings me no joy, as I realise the immense damage the accident did to the previously totally unblemished image and safety record of this great airline.

Until October 31, 2000, Singapore Airlines had never had a fatality in their 28-year history to blot their perfect copybook!

Singapore 006 departed Singapore for the flight to Chang Kai Shek in Taipei. The flight was uneventful, with no unforeseen problems occurring.

The aircraft, Boeing 747-412, registered 9V-SPK, was in top shape, and one of the youngest aircraft in a very young fleet of airliners. The aircraft touched down at Chang Kai Shek at 21:30 hours local, with an 85-minute turnaround schedule. It had to be airborne again, for Los Angeles' KLAX International Airport at exactly 22:55 hours.

EVERYTHING WAS NORMAL

Everything went normally during the turnaround. Two passengers, both Taiwanese businessmen, kept ramp/lounge staff guessing as to whether they would make it on board before "doors closed", but they turned up at the last minute, were processed, and went through immigration control, and managed to board. Their unluckiest day! If they had missed the flight they would have lived past that fateful night.

Photograph: Copyright 'Henry'

Flight plan route for SIA006 that night was RCTP-Airway R-583-KIKIT-ENTOK-BISIS-ERABU-DONAN-POMAS-MIMOD-SABAN-GURAR-KEC-BOBOT-MJE-Airway A-590-KAGIS-PABBA-SABES—POXED-PUGAL-PASRO-POWAL-PLADO-PINSO-PIPPA-POKNO-PUGGY-POETT-PORGE-MOUSY-ANC, then a right turn south from Airway A-590 to Airway B-453 with positions NOWEL-MDO-KATCH-KURTT-KANUA-KLARK-ALCOA-MAFIK-DINTY-KLAX

Chang Kai Shek ATIS: 127.6

The information in bulletin "N" (November) included temperature 21 degrees Celsius (69 degrees Fahrenheit), pressure 29.56 inches/1001 hPa, wind NNE at 41 knots and gusting in heavy rain. Not a good night to fly! And Typhoon Xangsane was lurking off the south coast threateningly.

TAIPEI APPROACH:	119.5, 119.6, 119.7, 125.1
TWR:	118.7, 126.18
GROUND:	121.7, 121.8
CLNC DELIVERY:	121.8 (Taipei Delivery)
VOR/DME:	114.3
ILS RW05L:	111.1 - TIA
DME:	Int'nal - Ch. 48 - TIA
ILS RW23R:	109.3 - TYA
DME:	Int'nal - Ch. 30 - TYA
ILS RW06:	110.7 - CKS
DME:	Int'nal - Ch. 44 - CKS
ILS RW24:	119.9 - CJN
DME:	Int'nal - Ch. 56 - CJN

Among the passengers were: 55 Taiwanese, 47 from the USA, 11 from Singapore, 11 Indians, eight Malaysians, five Indonesians, four Mexicans, four British, two from Thailand, two from New Zealand, two from Vietnam, one each from Canada, Australia, Cambodia, Germany, Japan, Philippines, Ireland, and one from Canary Islands/Spain.

As stated, Typhoon Xangsane was near Taiwan and moving close to its southern coastline, with heavy rains soaking the city of Taipei, including its international airport. Some of the winds the local Bureau of Meteorology were recording in the area of the typhoon were in excess of 90 knots.

At exactly 23:18 hours local, after a 23-minute taxi and hold, the Los Angeles-bound jumbo began its takeoff roll after being cleared for takeoff on RW05L. Suddenly, as the jet began to rotate, the front wheel struck a concrete barrier, the aircraft slewed and slammed into a construction crane. This literally peeled open the belly of the fuselage, and passengers began to fall out through the gaping holes 10 metres or more onto the runway.

The jet was at "Vee-1", or takeoff speed, as it burst into flames. The fully laden fuel tanks had been ruptured. Eighty two of the 179 souls on board the jet perished, and of those that survived this horrific crash, dozens were badly injured, most with shocking burns.

David Lee, an investigator with Taiwan's Aviation Safety Council, led media on an inspection of the crash site the next day, and the runway was littered with clothing from luggage, children's jackets,

Andrews Communications Systems

ESTABLISHED 1976 ACN 001 966 752

WHY PAY MORE?

ICOM

★ IC-Q7 h/h $299
★ IC-R2 scan $379
★ IC-R3 scan $999
★ IC-746 . . . . . .$2999
★ IC-R10 scan . . .$679

Limited stocks.
Subject to prior sale.
3 year warranty.
More ICOM discounted

AOR

★ AR-8200II scan **$1,049**

VOICECRAFT

★ "ROGER-BEEP" . .**$49**
power mic
★ DM-7600B **$169**
desk mic

TELESCOPES

GUARANTEED BEST PRICES IN AUSTRALIA

HIGH POWER NEW HF LINEAR PARTS . . . . . Call
★ 2kW 1:1 BALUN . . . $69 ★ MASTERROTOR . . . $199
★ 40A CONT POWER SUPPLY w/DIGITAL $379
★ POWER SUPPLIES FROM 2A TO 87A . . . . . Call
★ EMOTATOR ROTATORS . . . Limited stocks!

KENWOOD

NEW TS-2000 HF-VHF-UHF

HERE NOW – $3,499

★ TS-50S HF 100W TRANSCEIVER $1,499
★ TS-570SG $2,250 ★ TM-D700A $999
★ TS-870S CALL ★ TH-D7A $799
TWO-YEAR WARRANTY – CALL FOR TS-2000 INFO

NEW! BC-780XLT TRUNKTRACKER 3

DUE IN STOCK NOW . . . . BEST PRICE IN AUSTRALIA!

QUALITY USED RADIOS etc.

Licensed secondhand dealer. All warranted. Subject to Sale.

UNIDEN

UH-011 UHF MOBILE CB **CALL**
UH-077 UHF SCAN CB **$269**
BC-245XLT TRUNK TRACKER SCANNER **$449**

★ UNIDEN UH050XR .... $299, UH052XR .... $339, UHF CB

SYNCRO AUSTRALIA

MASSIVE PRODUCT RANGE HERE
★ DRAGON SS485H $489
★ MAGNUM DELTA FORCE $549
MICS, ANTENNAS, P/S etc
LINEARS from only $99

GARMIN GPS

... eTrex ... **$329**, GPS-12 ... **$429**
... eMap .... **$679**, GPSII+ ... **$579**
UHF CB ANTENNAS FROM $10 TO $249, TOP QUALITY

DIAMOND ANTENNAS . . . IN STOCK NOW!

MASSIVE SELECTION OF AMATEUR + CB ANTENNAS
★ ZETAGI B2002 600W AC LINEAR $999 ★YUPITERU MVT-9000 MKII $899
★ YUPITERU MVT-7300 . . . . . $649 ★ BC-3000XLT $399

ALINCO Amateur Radios

★ *Over 25 Years of professional service*
★ *No.1 **ALINCO** importer*
★ *Instant Repairs (Fridays)*
★ *3 Year Warranty*
★ *Massive Range*
★ *First **ALINCO** Factory authorised importer.*

ESG CD-ROM

119,000 FREQ'S $49

MFJ

Tuners, Analysers, Dummy Loads, etc. Plenty of stock

ELECTROPHONE TINY UHF CBs!!!

★ ***TX-3200 $349***
★ ***TX-3400 $449***
★ ***TX-6000 $479***

Plenty of Stock. Authorised Dealer.

MORE INFO & USED RADIOS LIST ON OUR WEBSITE... WE WANT USED RADIOS, ETC.

http://www.andrewscom.com.au • email – lee_andrews@dingoblue.net.au

CALL (02) 9636-9060 or 9688-4301 or FAX 9688-1995

SHOP 8, 41-51 BATHURST ST., GREYSTANES, NSW 2145

Near Great Western Highway

E&OE ***Why pay more?*** ***MAIL ORDER TO PO BOX 240, PENDLE HILL, NSW 2145***

Some items indent. Prices subject to change without notice – limited stock, some items.

nd pink and purple socks - the ones iven out by Singapore Airlines when you oard. The runway that the jetliner had een cleared to depart on was Runway 5L. But the one inspected by the media ith Mr. Lee was RW05R!

OW CAN THAT BE?

appears that in the rain squall, amidst he poor visibility and the other factors in ain that particular evening, SIA006 was ned up on the wrong runway, a runway 00 metres away, parallel to the runway it ad been cleared to depart from!

Investigators have not been able to etermine why the crew turned onto the ncorrect runway. The one they used RW05R) was filled with construction quipment, cranes, graders, and large oncrete blocks, located between taiways N4 and N8. Investigations into whether the runway with works being ndertaken (RW05R) was properly lit are ngoing.

Mr Kay Yong, managing director of the viation Safety Council in Taiwan, has tated that he can confirm the centre runway lights were definitely on, because a section of the closed off runway (05R) was being used by taxiing aircraft. He went on to say that a few seconds after the crash, an airport maintenance vehicle crew had asked the tower to turn on the runway lights, but this request had not specified which of the runways (05R or 05L) was the one not lit.

The centre lights, which were colored green on the closed runway and white on the active one, were apparently illuminated on the night of the accident. It's still not established whether the edge lighting, which signifies the runway can be used for takeoff, was on. Unfortunately, the airport has no ground radar, which means the air traffic controllers in the tower could not - and still can't - monitor the progress of taxiing aircraft on the airfield.

When the black box flight data recorder (actually it's colored red!) was located and the data accessed, it confirmed that the jet was on the wrong runway and there had been a series of collisions with static objects on the ground. After hitting the concrete blocks and slewing into the crane, it apparently skidded along the runway, breaking up as it went, spewing the passengers from the underside that was ruptured. The left wing caught fire. And at that point the aircraft snapped in two around the mid-section, and the entire fuselage was engulfed in flames.

The tail section sustained the least damage, with magazines and other personal effects still intact on the seats when rescue firefighters arrived at the burning aircraft. The ceiling and overhead compartments had collapsed, revealing air pipes and electrical cables.

Counselors and chaplains were at the crash site soon after the accident happened to comfort those who survived, and say prayers over the dead. The same situation existed in Los Angeles, where friends and relatives of the persons who were expected to arrive were being told at LAX airport that the aeroplane had crashed. They also had to be comforted and helped.

Investigators ordered the injured captain, a Malaysian pilot named C.K.Foong with more than 11,000 hours in his flying log, the first officer and the second officer to remain in Taiwan indefinitely, to help with the ongoing investigation. Their movements were not restricted however, and they were allowed to retain their passports.

THERE WAS NOTHING TECHNICALLY WRONG

Even though an official cause of the accident is yet to be determined and released to the media and the public, one thing that we can definitely report here is that an inspection of the wreckage by investigators concluded that there was nothing technically wrong with the aircraft at the time it left the departure gate to taxi for the runway.

Initially, just after the crash had occurred, Singapore Airlines chief executive Cheong Choong Kong offered an amount of compensation close to US$20,000 to each of the families of the deceased passengers.

When the airline found to its horror that the aircraft had been on the incorrect runway, this amount was increased instantly to more than $220,000 for each family. The total package cost in compensation is believed to be in the vicinity of US$32.8 million.

A re-enactment of the tragic collision was staged a few days after the accident by the authorities in Taiwan, to try and answer some baffling questions that had surfaced. The accident investigation team used a Boeing cargo aircraft for this purpose. The re-enactment was filmed, with experts from the Taiwan Aviation Safety Council, Boeing, USA's National Transportation Safety Board, and Singapore Airlines all on board.

ON THE WRONG RUNWAY

All investigations are centred around the reason why the pilot chose to place his aircraft on the wrong runway. Was it a direction from air traffic control? If so, why hasn't it been heard on the transcripts of air traffic logging tape from the Tower?

Was it pilot error? Or was there some other reason/factor yet unknown that caused this horrendous accident?

What part did wind shear have to play in the accident, if any? (Wind shear is an abrupt change in wind speed and direction within a mass of air. The shear takes place at the boundaries where the winds meet each other, and extremely turbulent eddies occur. Wind shear accompanies frontal passages and can exist whenever there are strong surface winds, like there was that fateful night.)

Did other airline aircraft or general aviation aircraft try to depart the airport during the same period that SIA006 was departing?

In completing this article, I will report to you that airlines generally are a very superstitious lot just like mariners. Sailors don't like re-naming vessels. They see it as bad luck. And airlines are very similar when it comes to crashed flights. If a flight goes down, and it is carrying a certain flight number, like SIA006, this flight number will never be used by that airline again.

The Korean Air aircraft that was shot down by the Russians was KAL007. You will never see another Korean flight with that flight number appear again.

I hope that the presentation of the known facts surrounding this accident have been of interest, and that eventually investigators may know all the answers.

The fact that the flight crew survived means that a positive conclusion/finding is highly likely to be arrived at in the near future.

Inquiries into the disaster are still ongoing as this article goes to press.

AUSTRALIAN-MADE ANTENNAS

SETTING A NEW STANDARD

All new 5/8 vertical antenna fully assembled factory tuned with 16 radials	$139
Dual drive 26-30 5 ele beam s/s fix	$275
4 ele 26-30 mhz beam antenna	$235
5-6 or 7 ele high gain beams	call
3 ele Delta loop 10-11m	$314
5/8 vert 4-1/4 wave radials	$170
4 ele dipole array vert 70 om/477.6 mhz	$270
Duo-band 10/15-3 ele each band	$356
Log periodic 9 ele 13/30 9.6 mt boom	$980
Tri-band 6 ele s/s fix 6.8 mt boom	$825
3 ele 20 mt comp opt s/s fix	$670
3 ele 15 mt comp opt s/s fix	$265
MB vert no traps 10-80	$291
40 mt linear/loaded 2 ele beam	$555
6 mt 6 ele comp opt beam	$236
6 ele 6 m n b s design 12.5 dbi	$325
12 ele 2 m beam bal/gamma /f-d feed	$130
70 cm 15 ele bal feed	$119
2 m vert 2-5/8 co linear 4 rad	$94
New/bal uns 1-1 to 16-1 to 3 kw	call

COM1200PA

COM-AN-TENA

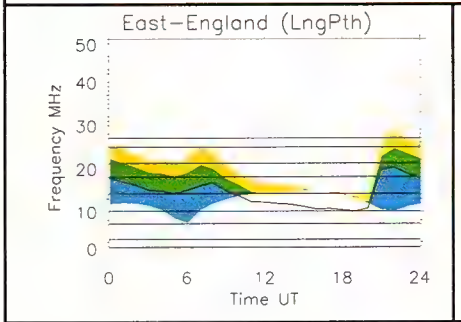
(formerly a.j. & j. coman)

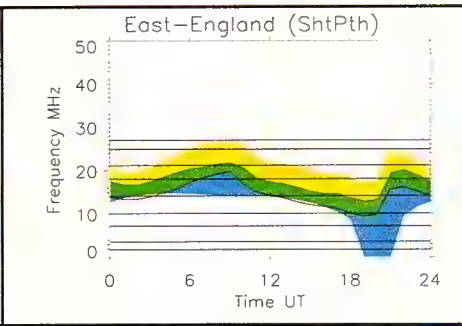
83 Belgrave-Hallam Road, Hallam 3803

Ph: (03) 9702 4028

Mobile: 0419 542 437 ANDY VK3IV

Propagation Fo





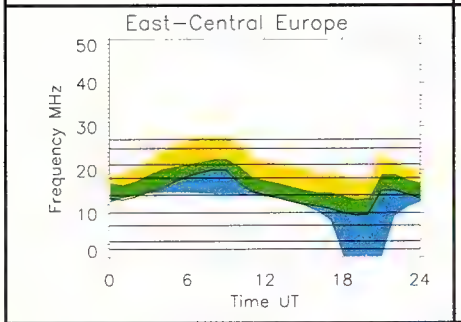
ABOUT THESE CHARTS

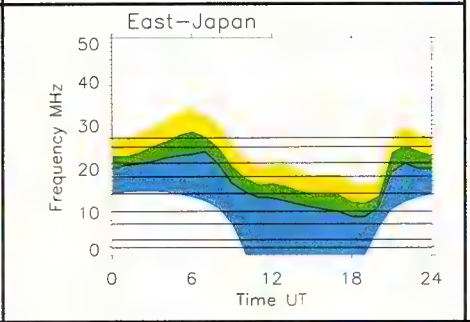
The data on these pages are graphs showing forecast for expected HF operating conditions between Australia an a number of important DX destinations. The informatio they contain is prepared by **IPS Radio and Spac Services**, a division of the federal Department of Industr Science and Tourism. IPS monitors changing radio cond tions — which are affected most greatly by fairly predictabl changes in solar activity — and issues reports and warning based on that data.

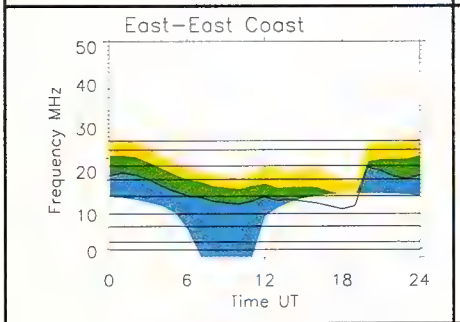
Stations in the eastern half of Australia should refer t graphs on the left hand page. The data on the right han page is calculated for stations in the western half of the cor tinent. Of course, if your location is in the middle of the cor tinent try reading them *both*... then make an educate guess.

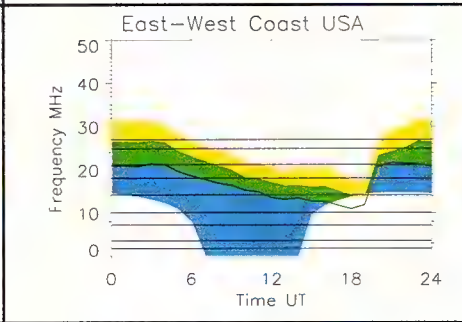
The horizontal axis of each graph represents the hour c the day expressed in Universal Co-ordinated Time or UT ('z'). The vertical axis shows the entire HF spectrum with horizontal line representing each HF amateur band.

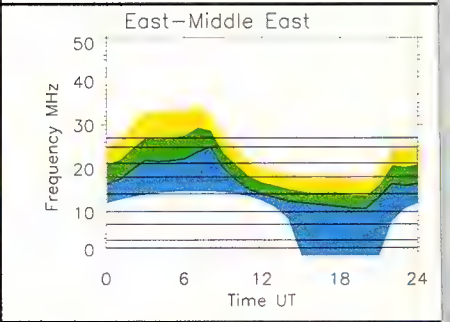
The maps are easy to read. First go to the map whic looks closest to the area in which you are interested. Loo *up* from the time and *across* from the frequency to the poin at which the two variables merge. Note which grey scale — if any — appears at the intersection of the particular tim and frequency combination for that area and refer to th legend (right) to find the sort of propagation most likely t apply. If the space is blank the forecast is not good — you time and frequency combination is unlikely to allow commu nication to the destination station.

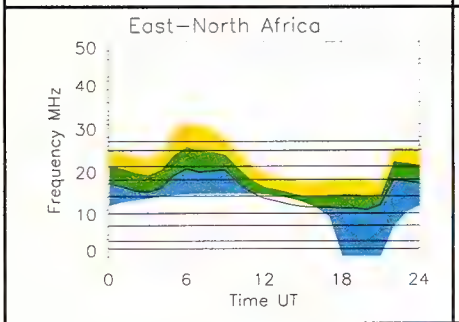


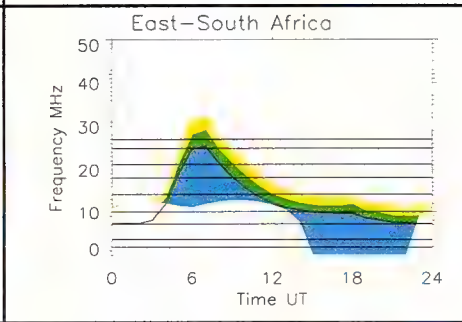


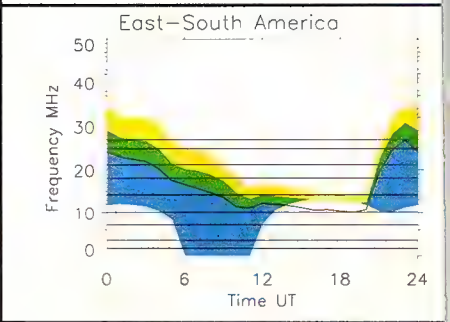


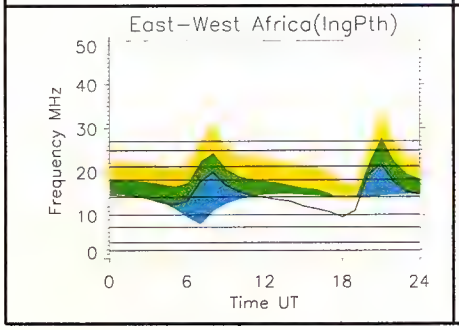


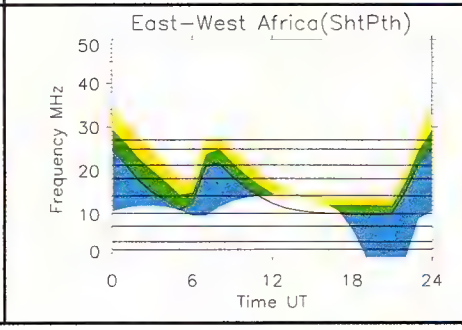


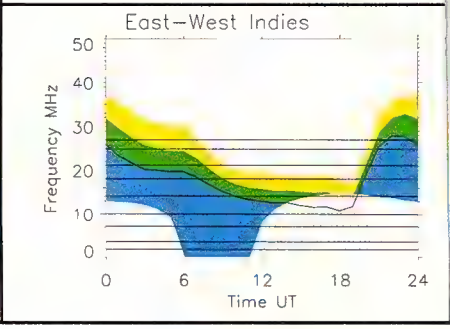












caster July

LEGEND

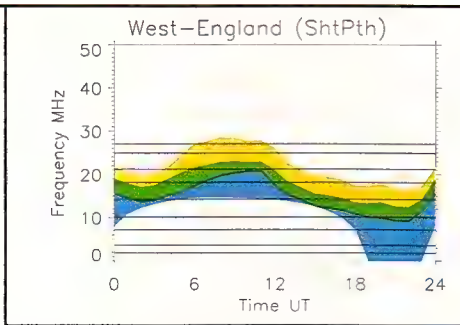
UD Upper Decile — You have a 10% chance of getting through.

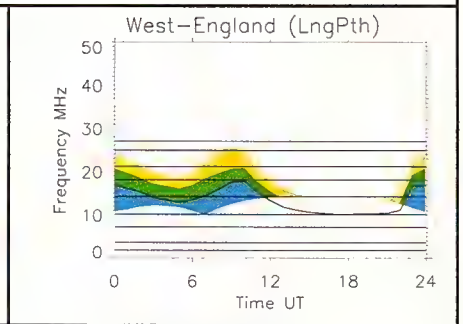
MUF Maximum Usable Frequency. 50% chance to get through.

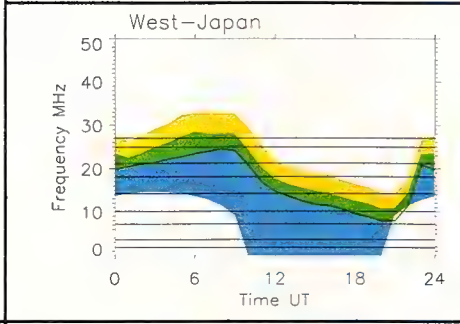
OWF Optimum Working Frequency. 90% chance of a contact.

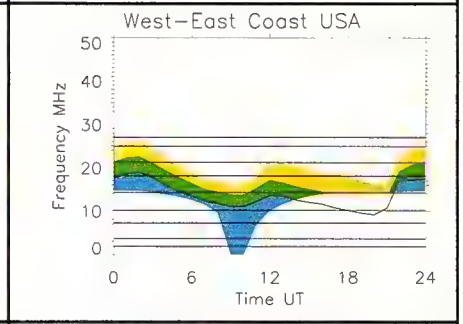
EMU E-layer Maximum Working Frequency.

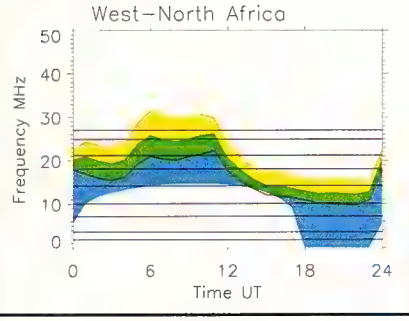
ALF Absorption Limiting Frequency. Lower limit of the usable band.

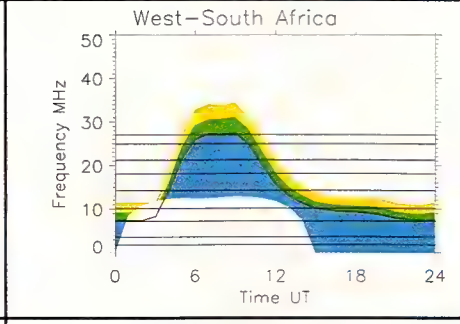


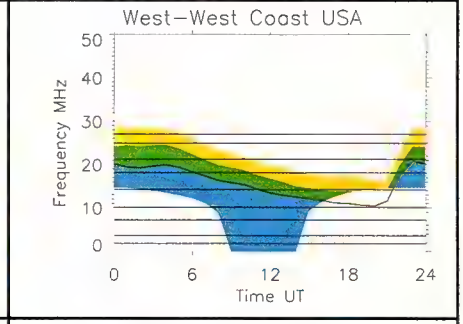


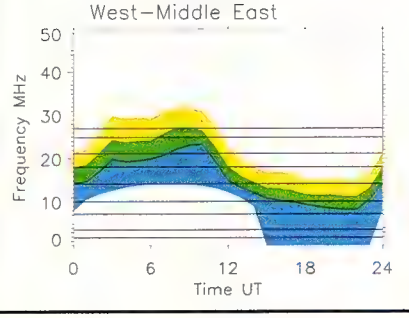


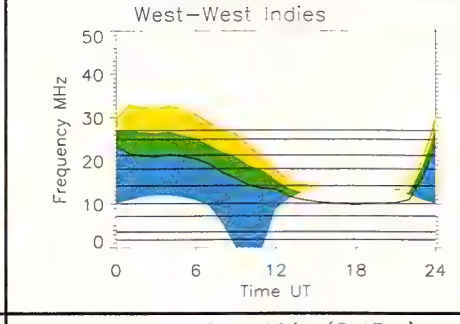


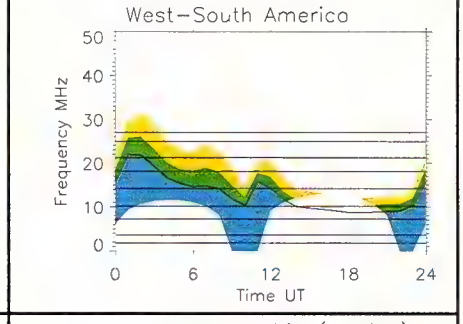


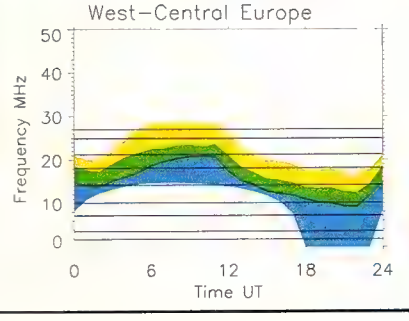


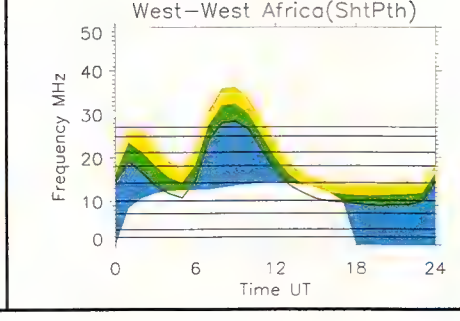


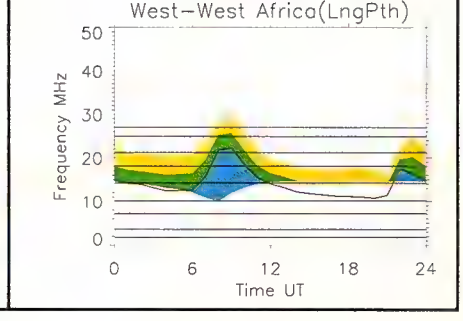












...CLASSIFIEDS...CLASSIFIEDS...CLASSIFIEDS...

ADVERTISERS PLEASE NOTE All classified advertising copy is typed in by a non-amateur typist who, reasonably enough, cannot decode illegible writing. In short, she types what she sees, and if your writing is poor you can expect either crucial errors, or the non-appearance of the advert. PLEASE ENSURE THAT YOUR CLASSIFIED IS LEGIBLE. ALTHOUGH YOU KNOW WHAT YOU'RE ADVERTISING A TYPIST DOESN'T!

VK 1

* **Icom IC-728** 100 Watt HF Transceiver VGC $440. Tektronix 7704A Oscilloscope 250 MHz. VGC. $360. VK1VP. Ph. (02) 6249 6348.

VK 2

* **For sale:** Uniden 9000XLT scanner as new is box, used once. $330 Mike VK2ASR 02-4472-9338.
* **For sale:** YAESU FT-1000MP, very sparingly used, as new and in top condition. $2850 ono. Raj 02)9211 2824 or email: vk2ipd@hotmail.com for more details
* **Philips FM900** Selcall Unit Type 1. $12. 11 amp Tait Power Supply. Needs minor parts. $35. New 3-ELL HF Yagi Beam. $75. Sawtron 999. $340. Steven. (04) 3802 1466.
* **Yaesu FT890R** HF Transceiver. All bands and all modes. Last of Yaesu's best used receivers only. VGC. $900. Icom IC-T8A Tri-band hand held Transceiver 6m-2m-70cm accessories soft case spk/mic charger AA battery case. VGC. $350. Chris VK2YMW QTRH (02) 9487 2764.
* **IC-257A** All mode Transceiver Boxed with accessories never used. Excellent condition. $875. Models A148-10S and A50-3S Antennas by Cushcraft unopened boxes. $195. each. Model MFJ-921 VHF Dual Band Tuner Excellent Condition - again never used. $85. ED-52C Multi Band Wire Antenna never used. $139. ono. QTHR (AH) Steve (02) 9876 8264.
* **Wanted:** Heathkit TX-1 (Apache) RX-1 (Mohawk) and SB-10. Also Hallicrafters SX-28 and matching transmitter. Greg. VK2GWP (02) 4958 1541.
* **For sale:** Valves 4-125, 807, 6je6, 6dq5, 6a8, 6v6, 6ej7, 12at7. 6be6, 6an7, 6am5, 6j6, 6bl8, and many more call VK1BM, Robert, 02 6258 6493.
* **For sale:** Valves. Four boxes of new and use valves for sale. Includes 807, 5R4GY, 12AX7, 6AU7, 6J7G, 6V6G, etc. Any offers considered. Ring for full list. John, VK2WW, 02 9546 1927
* **For sale:** Yaesu FT1000MP $3200 ono, Kenwood TS50 with Kenpro speech processor $1200 ono, Kenwood MC60 mic $150, Yaesu SP102 speaker $60 ono, Yaesu FC 102 tuner $220 ono, Multi Band vert 10m to 80m $120 ono, Cushcraft R7000 vert 10m to 40m top cond $420 ono. VK2QG (H) 02 96263537 (M) 0419297996 www.marta.reedman@nutrimetics.net.au
* **Wanted:** Alinco DX-70 HF, 6m in good order, I pay postage. Bob vk2zrf@dingoblue.net.au phone 0244230286
* **For sale:** Command [SCR-274N] receivers, transmitters and modulators, on racks, with connectors, remote controls and tuning cables. Brian VK2GCE 02 9545 2650 or brianclarke@telstra.easymail.com.au
* **For sale:** IFR 500A communications test set with calibration cert if required. Aluminium carry case. Unmarked appearance and electrically excellent. Owner has retired. $10,500. Barry VK2BZ 0249711668.

VK 3

* **Silent Keys.** If you are managing a silent key estate, please save the QSL cards for national QSL collection. Contact VK3TL. Ken Matchett. (03) 9728 5350.
* **Yaesu** Transceiver current model FT840 brand new HF Transceiver fitted with FM board. $1000. Dave. VK3DC. Ph. (03) 5483 2220 or Post Office Box 978, Echuca, Vic. 3564.
* **Icom 706** Transceiver. $1250. MFJ 1278 Multi Modem. $250. MFJ 784 DSP Filter. $200. Emtron TE23M Compact Beam. $225. Perfect condition. (03) 9809 0924.
* **Kenwood** 6 Metre All Mode Transceiver Model TS-60S with desk and hand mic. manual and leads. As new condition. $800. Gary. VK3XGL (03) 9741 9942.
* **Coax** 214 50.0 HM. Brand new super quality double braid silver coated last of roll - 63 metres. Sacrificed for less than half price. $150. Werner Wulf Duo Band Yagi 10-15 mtrs. 6 Elements. EC. $100. Ph. (53) 68 9477
* **Collins** Radio Valves: 51S-1 RX. Complete set 17 new valves $180. KWM-2/2A Tx./Rx. Complete set 18 new valves with 6146A's $300. With 6146B's $330. Drake MN4 Impedance Matching Network as new with handbook. $150. Wanted: Collins URR390A Rx. In GWO. Ed. (03) 9850 2134.
* For sale: Co-phased 432-20LBX KLM antennas, 20el, 15.3dbd gain each, will separate. Phasing harness free with the pair. Price $120 each. Colin 0359861019 or col@alphalink.com.au.
* **For sale:** Command [SCR-274N] receivers, transmitters and modulators, on racks, with connectors, remote controls and tuning cables. Bill VK3AQB 03 9337 4902 or jikajika@net2000.com.au
* **For sale:** FT101 HF $150,

VK 4

FT757GX HF $500, Palomar HF amp 300w, 13.8V $150, Yagi 3-el tribander, balun, coax $125. peterhadgraft@yahoo.com VK4APD 07-3397-3751
* **For sale:** NEC travelling wave tube, type LD4437 L1-1, new, old stock. Quantity available 12, PC, $800 the lot. Phone Bruce (04) 0898 2265 or (07) 3375 1474.
* **For Sale:** Yaesu FT-1000MP HF transceiver in excellent condition $4200. Yaesu FL-7000 HF linear amplifier VGC, serviced by Dick Smith Electronics to manufacturers specifications $2400. Manuals included with both units. Contact Harry VK4EL on 07-5445 2647 or heverett@one.net.au

CAVEAT EMPTOR — BUYER BEWARE

*The acceptance of classified advertisements in the **Radio and Communications** classified advertising section does not warrant in any way that the goods offered are available, free of any encumbrance, in working order or otherwise satisfactory. **Radio and Communications** cannot accept any responsibility for goods advertised in the classified pages and no correspondence will be entered into regarding such goods.*

***NOTE**: Apologies to some readers – their advertisements sent to the previous address were not passed on in a sufficiently clear form to be used. Please re-submit to us and we'll be pleased to run them.*

PLEASE NOTE: At least five faxed classifieds arrived for this issue which, despite our best efforts, remained undecipherable. Obviously, they did not appear. Please ensure that your writing can be read and understood. In the case of email, your advert must be written in plain text with upper/lower case, hopefully with some punctuation and correct spelling, and marked as to appear under VK1, VK2 etc. "VK3" at the start of your text is fine, followed by "Wanted:" or "For Sale", etc. We will not accept "styled" email, nor "attachments" – just plain text please.

Printed at Hannanprint Victoria, 504 Princes Highway Noble Park VIC 3174 Ph 03 9213 3111

* The price set out or referred to herein is a recommended price only and there is no obligation to comply with the recommendation.
All prices referred to in **RADIO and COMMUNICATIONS** are recommended retail prices unless otherwise stated. The publisher's terms and conditions are set out in its current advertising rate cards, which are available on request. They include an exemption clause, a monetary limitation of liability clause, and an indemnity from the advertiser and any advertising agent. Advertisers and agents are advised to read the card before placing any advertisement or series of advertisements.

RADIO and COMMUNICATIONS regrets that it is not possible to verify information other than that conveyed in the editorial content of the publication.
Opinions expressed in the editorial content of this magazine are wholly those of the respective authors and are not necessarily those of the publisher.

Copyright © 2001 Material contained in RADIO and COMMUNICATIONS magazine is protected under the Commonwealth Copyright Act 1968.
No material may be reproduced in part or in whole without written consent from the publisher.

..CLASSIFIEDS...CLASSIFIEDS...CLASSIFIEDS...

Kenwood TS-43X HF ransceiver - just serviced. xcellent condition. Emtron AT-300 Antenna Tuner Morse ey - the lot $985. (07) 3359 736 / 0418 443342.

Wanted: Kenwood SP31. xternal speaker. Call Mark. K4IDX. (07) 4055 6214.

Desk Microphones: ex irport solid units with Elecret nd Canon plug on cable. Great ase station CB Ham. $15 ea.)7) 4039 2417. elenets@telstra.easymail.com.au .

VK 5

Wanted: Information regard- g Crammond Model CTR66 X/RX radio. Collector's item. laybe somebody knows or ould be interested. Email enn19@hotmail.com.au. Ph. 08) 8823 3636.

VK 6

For Sale: Icom IC-736 HF+6m allmode. Inbuilt ATU and SU, EC $1500. Icom IC-821H m + 70 cm allmode satellite rig vith Icom SM-8 desk micro- hone. EC $1500. Kenwood TS- 11A 2m allmode, EC $600. All no. Rick VK6XLR (08) 9921 7073 or vk6xlr@qsl.net

For sale: Kenwood TS660 ransciever all mode quad bander 300, also Philips FM92 convert- ed to 2 metres amateur. Geoff VK6AT, 08 95814596 or geof- mary@starwon.com.au

Australian Radio DX Club Inc

The premier club in Australia, since 1965, for utility (including military and marine), shortwave, broadcast band listeners. Contact John Wright, 4/33 Kerrie Crescent, Peakhurst 2210, NSW or by 'phone (02) 9533 6261. 12 month membership within Australia, for hard copy delivery $37 and for email PDF format version only $22, GST included.

A free sample copy will be sent on request.

Other benefits of membership apply.

Reg A0011728G.

*** For sale:** Icom IC-765 $2,200- Icom IC-1271 allmode 23cm $1,500-Icom IC-28E FM 2m $200-Icom IC-290E allmode 2m $350-Kenwood TS-440 $500-TS-50 $600-SSB electronic 23cm solid state 100w amplifier TLA 1270 $1,500,-SSB elect SP70 pre-amp, brand new $350- SP 6 brand new $300-SWR meter Diamond SX 1000 $250-Icom mic SM-8 $120-Drake speech proc P-75 $100-Drake speaker MS-7 $50-Drake wattmeter W4 $200-JPS noise red NIR-10 $200. Tel (08) 9341 2054 or VK6BCP@arrl.net

*** Icom IC207** UHF/VHF TX. $500. Dragon 485+ 10 metre TX. Offers. Both original boxes, manuals. Emotator 105TSX Rotator. Needs attention. Offers. Vaso. VK6VAS (08) 9964 2385.

VK 7

*** Kenwood** TS690S HF+6M . Comes with MC80 Desk Mic, manual and boxes. Mint Condition. $1550. John. VK7ZZ (03) 6267 4473.

CB / GENERAL

*** For sale:** AOR 8200 h/held scanner $850 ono, c/w all acc in box, EC. Paul 08 85 565 058. general

*** Wanted:** Philips PRM8020/30 UHF TmTu band radio for RFS station, in good condition, reasonable price paid, also details of UHF CB loop Yagis. Ross 0428844170

*** Wanted:** Johnson Viking 4740 LED model, also 40 channel clicker to suit a 352D. D Sammut PH 9877.0675

*** CB Radio Shack** cleanout: New transistor for PLL-02A circuits, Antennas, RF adaptors, much more. Send SASE for list and prices. P.O. Box 76, Peterborough, SA, 5422. (08) 8651 2398

*** NOS Connectors** Male N-Connectors for RG213. $5.80. Male PL259 for RG213. $2. Male PL259 for RG58. $1.20. 100 PL259s for RG58. $90. Screwdrivers Experts Guide CB book. $20. 10 el UHF Yagi. $55. Unused Sunshine Eprom Programmer up to 28 pins

Want to write about your hobby?
Email
lenshaw@eck.net.au

2712-2764 up suits 386-486 PC with radio programs. Mick. (04) 3890 5284.

*** Yaesu** antenna tuner FC-901. $200. Osker Block SWR meter. $60. Telex Power Mic. $15. 4 Element HF Beam. $50. Two AX144 Sideband Radios. $80. Ea. Kenwood Commercial UHF 35 watt. $150. Dick Smith Hornet SSB VGC. $50. Lightweight Rotator & Switch Box. $25. Karinna SSB VGC with power mic.$70. Tram 23 Ch. with extras. $40. (02) 6736 3923.

*** Deceased** Estate: Kenwood 180S Transceiver with photo-copy of manual. $500. or best offer. Ph. Peter (08) 8658 1436.

*** Station Master** MK2 two months old. $70. ono with receipts. 2 metre Cushcraft Ringo antenna. Excellent condition. $70 ono. 1 Mobile One 2m-70c mobile whip brand new never used. $25. For sale one Nokia 3210 $170 ono, plus coloured cover and portable hands free kit for Nokia 5110. $15 ono. Ph. (02) 4283 2172.

*** For sale:** Uniden 9000XLT scanner as new is box, used once $330 Mike VK2ASR 02-4472-9338.

FOR SALE:

Major clear-out of equipment, some new, some mint cond, all GC, all goers. New = never used, mint/as new = maybe used one or twice for review purposes, EC= used, unmarked, quality performance, GC= quality performance, used, may have scratch, dent or whatever. All prices are plus postage/transport.

TRANSCEIVERS & ACCESSORIES:
Kenwood SP20 filtered speaker,EC - $195
Kenwod PS50 power supply, EC - $225
Icom IC-229H 2m transceiver, as new, manual - offer

CW/DIGITAL:
Kent Key - mint - $125
MFJ Grand Master Memory Keyer, mint, manual - $75
MFJ 959 Receiver Tuner/Preamp, mint - offer

ANTENNAS, etc:
* HyGain Long John - mono - 15m, 5el on 7.9m boom, 12dB gain, 34dB front back ratio - superb antenna, manual - $425

Mobile One:
M1-20, 20m mobile whip, as new, tunable - $30
M1-80, 80m mobile whip, as new, tunable - $40
M476, colinear UHF 6dB, 450-500MHz - new - offer
CD470, ground independent 477MHz, inc. coax - new - offer
D4207, 5/8 144MHz - new - $15
DX1605SH, 26.5-29MHz, mobile whip - new - $45
DX5, heavy duty 27MHz - as new - $95
Terlin (Outbacker):
(1) Taps: 2.3,3.560,3.580,3.615,4.055,5.410,6.840,21.175, 28.460,28,540, GC - $225 (save $100 on new cost)
(2) Taps: 2.360,3.540,4,010,4.880,5.300,7.307,7.475,21.160,27,055, 27.355, GC - $225 (save $100 on new cost)
(3) Taps: 80m, 4.077,6.218,40m,8.198,8.707,12.308,20m, 16,423, as new - $225 (save $100 on new cost)
Benelec: 0276: 24el discone 60-1,000 MHz - new - $150
ZCG: Ground independent, 27MHz - new - $75

All of the above are realistically priced for quick sale, first in best dressed. Len Shaw VK3ALS, ex-editor CB Action, ARA, editor R&C – email preferred: lenshaw@eck.net.au or (03) 57 992 943, fax (03) 57992979.

Use the Internet: E-mail your Classified to lenshaw@eck.net.au

Radio and Communications

Incorporating AMATEUR RADIO ACTION and CB ACTION

Amateurs, CBers and hobby communicators of all kinds are invited to place a FREE classified in this section of the magazine. Amateur gear, CB radios, scanners, antennas, computers, wanted or for sale items, power supplies ... it's all fair game. Note our policy, however, that readers who do not hold an amateur qualification may not advertise to purchase amateur transmitting equipment. So dust off that old relic and get busy with the pen. Your first 25 words are FREE, then it's just $5 per 25 words after that. Adverts must be clearly PRINTED. Please read and note the conditions below.

Use the Internet: E-mail your Classified to lenshaw@eck.net.au

Readers of **RADIO and COMMUNICATIONS** may use the **CLASSIFIEDS** column to the extent of 25 words absolutely free! This offer applies only to private 'For Sale' or 'Wanted' classified listings, and to computers, software or computer peripherals and other hobby communications equipment — scanners, amateur or CB transceivers, etc.

A **limit of one classified** advertisement applies to each advertiser. **Any additional words must be paid for or the advertisement will not be accepted.** A nominal fee of $5 per additional 25 words or part thereof will apply. This fee should accompany your material if applicable. Please enclose this fee or your advertisement will not appear.

Your advertisement's **inclusion cannot be guaranteed**, but every effort will be made to place your advertisement in the issue following receipt of copy. The 25 words **must include your name and phone number.**

The publisher reserves the right to amend or reject any advertising material considered unsuitable for publication. No correspondence will be entered into.

DO NOT SEND TWO SELL FORMS. ONLY ONE AD WILL BE RUN!

Repeat CLASSIFIEDS advertisements will be accepted for a fee of $5 for every 25 words — *including* the first 25. Once again, this fee should accompany your material.

Advertisements for **commercial goods** or services will not be accepted for publication in these classifieds pages. This classified section is for **private sales/purchases** only. **E-mail submissions to lenshaw@eck.net.au are preferred.**

For details of **display advertising** elsewhere in the magazine phone our **National Advertising Manager, Len Shaw on (03) 57 992 943**

Readers should note that all advertisements are required to comply with the provisions of the Victorian Consumer Affairs Act of 1972. They should be aware that, under the above Act, Post Office box numbers can be published **only if the full name and residential address** of the box holder is supplied with the advertising material. Our fax number is (03) 57 992 979

. This form is to be used for all classified advertising material in RADIO and COMMUNICATIONS. Letters or faxes on plain paper requesting the insertion of a classified advertisement will not be accepted.

Clip this form and post it to:

R and C Classifieds
PO Box 887
Seymour
Victoria 3661

We prefer email! Send your classified to lenshaw@eck.net.au

IMPORTANT NOTICE: Unsuitable material includes advertisements for wanted amateur transmitting equipment where no valid amateur call sign is shown, 'for sale' equipment modified for general coverage transmit, etc.

➡ ONE WORD PER BOX! ➡ *Deadline – August issue: 3 July 2001*

FREE

PAY $5

BELOW IS NOT FOR PUBLICATION, BUT THE DETAILS MUST BE COMPLETED OR YOUR CLASSIFIED *WILL NOT RUN*

Your name: _____ *Amateur call (if any):* **VK** _____

Residential address: _____ *Phone contact*: ( )* _____

_____ *State* _____ *P/C* _____

Your signature: _____ *Today's date: / /* _____

* This number is for the editor's use only — to check any details. State if business or after hours number. *NOT* for publication!

YAESU'S DONE IT AGAIN

NEW FOR 2001

YAESU

Yaesu FT-1000MP Mark V Deluxe HF Base Station

Yaesu is proud to enter a new chapter in the history books with the release of the new premier-class MARK-V FT-1000MP. Offering new features such as 200W PEP RF output, a Class-A RF power amplifier, interlocked Digital Bandwidth Tracking, a variable RF front-end preselector filter and improved control layouts, the MARK-V represents the highest overall performance ever offered in a Yaesu HF transceiver. Whether your interest is in ragchewing or contest operation, the MARK-V's outstanding hybrid analogue/DSP receiver IF chain incorporating a new 10 pole Collins SSB filter and the use of Enhanced Digital Signal Processing (EDSP) with improved front panel access provides dramatic improvements in readability under tough conditions. For ease of use, the new MARK-V uses an external FP-29 power supply which can be mounted next to the transceiver, or under your operating desk. Yaesu's IF-based EDSP system provides noise-reduction protocols, audio enhancement with equalisation programs for Tx and Rx use and an automatic notch filter which identifies and eliminates multiple interfering carriers. The MARK-V FT-1000MP also features selectable receiver front-ends, High-stability Reference Oscillator, an internal high-power auto antenna tuner, two main antenna sockets, selectable tuning steps as small as 0.625Hz, dual-mode noise blankers, 500Hz and 6kHz IF filters, an RS-232C computer interface, plus easy digital mode interfacing. With so many new and improved features, why not ask for a copy of the 8 page colour brochure today to learn more about this amazing new transceiver.

D 3450

$6500

On display at selected PowerHouse stores only. Please call for details. All Yaesu products are priced in Australian dollars, and are not stocked in Dick Smith Electronics stores outside Australia.

Offer expires 31/7/2001.

DICK SMITH ELECTRONICS

That's where you go!

2733 IBC 4 col.

MORE GREAT GEAR FROM ICOM

IC-T81A

A remarkably compact quad bander.

· VHF/UHF Multiband FM transceiver · 2M, 6M, 70cm, 23cm
· 124 alphanumeric memory channels · Ni-MH battery
· tone squelch, "joy stick" operation

IC-910H NEW!

The new dimension in the VHF/UHF World!

Tri band multimode transceiver • 2M - 100W, 70CM - 75W (optional 23CM,10W) • 9600 bps packet operation • Satellite communication • Reverse/normal tracking doppler shift compensation • CIV capability for PC control

IC-718 A compact HF all band transceiver.

A superior performer with simple, straightforward operation with keypad. Optional DSP capabilities, including noise reduction and auto notch function. It's versatile, compact and loaded with features.

IC-756PRO The HF & 6M multimode professional performer.

100 watts of power, newly designed 32 bit floating DSP for noise reduction and auto notch function, and AGC loop operation for wider dynamic range. Plus digital IF filter, built-in RTTY Demodulator/Dual Peak APF, and a whole lot more.

IC-706MKIIG

The amazing evolution of the legendary 70

Now includes the 70cm - 20W and output power has been increased to 50W on 2m. You get base station performance and features in a mobile rig sized package.

ICOM
Clearly Ahead

See your nearest Icom dealer or visit our website at **www.icom.net.au**

2 YR WARRANTY